Notes of lessons

Prep (1)

Prepared by

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MATHEMATICS

Mathematics Syllabus Distribution
1st prep – 1st Term – 2022/2023

Month	Algebra and statistics		Geometry and measurements	
October 2022	**Unit 1: Algebra** -set of rational numbers -Comparing and ordering rational numbers -Adding rational numbers	One and half period weekly	**Unit 4:** -Geometrical concepts Line segment – straight line – ray – angle – adjacent angles – complementary angles.	One period weekly
November 2022	**Unit 1: Algebra** -Properties of addition operation in -the set of rational numbers -Subtraction of rational numbers -Multiplying of rational numbers -Properties of multiplication operation in the set of rational numbers -Division of rational numbers **Unit 2: Algebra** -Algebraic terms and algebraic expressions -Like terms -Multiplying and dividing algebraic terms		**Unit 4:** -Geometrical concepts Supplementary angles – V.O.A. – accumulative angles at point – angle bisector. -Congruence -Congruent triangles -Parallelism Act. 1: If a straight line intersects two parallel straight lines then ……………….. Act. 2: two straight lines are parallel if ………….... Act. 3: the perpendicular straight line to …………………	
December 2022	**Unit 2: Algebra** -Adding and subtracting algebraic expressions -Multiplying a monomial by an algebraic expression -Multiplying a binomial by an algebraic expression -Dividing algebraic expression by a monomial -Dividing algebraic expression by another -Factorization by taking out the H.C.F.		**Unit 4:** Act. 4: if two straight line are parallel to a third …… Act. 5: if parallel straight lines divide a straight line …… -Geometric constructions • Bisecting an angle • Drawing a perpendicular to a straight line • Drawing a congruent angle • Bisecting a line segment	
January 2023	**Unit 3: Statistics** -Reading and interpreting data -Mode - Median - Mean		**Unit 4:** -Geometric constructions • Drawing a perpendicular to a straight line • Drawing a parallel straight line.	
	-General exercises & model exams			

☞ **Activities, researches and revision must be done side by side with teaching syllabus.**

Teacher	Inspector	Headmaster

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Day	Date	Class	Period	Algebra – Unit 1
				Lesson 1 **The Set of rational numbers**

Teaching Strategies	
Brain storming	
Problem Solving	
Team Teaching	
Role-playing	
Work Groups	
Team Teaching	

Lesson Objectives: -

By the end of the lesson, students will be able to:

1. Discover the rational numbers.

2. Find different forms of a rational number.

3. Convert between the different forms of rational numbers

Teaching Aids	
Student's book	
Workbook	
Teacher's Guide	
Library	
Board	
Data show	

Warm Up: (5 Min.)

- Bassem wanted to divide 10 oranges equally between his two brothers , Amgad and Ayman such that each of them takes a whole number of oranges. He found that the share of each is 5 oranges.

- Another day , he wanted to divide 9 oranges equally between his two brothers such that each one takes a whole number of oranges , but he could not because each of them took 4 oranges and one orange is remained. He divided it between them, so the share of each of them was 4 oranges and half.

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Presentation: (5 Min.)

- You studied in the primary stage some sets of numbers as :

  * Set of counting numbers $= \{1 , 2 , 3 , 4 , ...\}$

  * Set of natural numbers $\mathbb{N} = \{0 , 1 , 2 , 3 , 4 , ...\}$

  * Set of integers $\mathbb{Z} = \{... , -3 , -2 , -1 , 0 , 1 , 2 , 3 , ...\}$

- In this unit , you will recognize another set of numbers called "The set of rational numbers" and it is denoted by the symbol $\mathbb{Q}$

The set of rational numbers $\mathbb{Q} = \left\{ x : x = \dfrac{a}{b} , a \in \mathbb{Z} , b \in \mathbb{Z} , b \neq 0 \right\}$

Associated Activity	
Meetings	
Website	
Research	
Reading	

Activity (1): (10 Min.)

Show why each of the following is a rational number :

1. $3\frac{2}{5}$

2. -0.17

3. 0.006

4. 27%

1. $3\frac{2}{5} = \dfrac{(3 \times 5) + 2}{5} = \dfrac{17}{5}$

2. $-0.17 = -\dfrac{17}{100}$

3. $0.006 = \dfrac{6}{1000}$

4. $27\% = \dfrac{27}{100}$

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Each of the previous numbers is a rational number because each of them can be expressed as $\dfrac{a}{b}$ where a and b are integers and $b \neq 0$ as follows :

Teaching Strategies	
Brain storming	
Problem Solving	
Team Teaching	
Role-playing	
Work Groups	
Team Teaching	

Activity (2): (10 Min.)

If $\dfrac{a}{b}$ is a rational number, then $b \neq 0$

1 $\dfrac{3}{2x}$ will be a rational number if : $2x \neq 0$

therefore the required condition is : $x \neq 0$

2 $\dfrac{7}{x-3}$ will be a rational number if : $x - 3 \neq 0$

therefore the required condition is : $x \neq 3$

Teaching Aids	
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Workbook	
Teacher's Guide	
Library	
Board	
Data show	

Activity (3): (10 Min.)

Complete the following:

1 If $\dfrac{5}{a}$ is a rational number, then $a \neq$ ·········

2 The number $\dfrac{3}{x-2}$ is a rational number if $x \neq$ ·········

3 The number $\dfrac{2}{3x}$ is a rational number if $x \neq$ ·········

Teaching sources	
School book	
Teacher	
Library	
Teacher's Guide	

Associated Activity	
Meetings	
Website	
Research	
Reading	

Activity (4): (10 Min.)

If the rational number $\dfrac{a}{b} = 0$, then $a = 0$

If the rational number $\dfrac{x-3}{x+3}$ equals 0, find the value of x

Since $\dfrac{x-3}{x+3} = 0$

therefore $x - 3 = 0$ 　　　　　　i.e. $x = 3$

Complete the following: -

The rational number $\dfrac{4-x}{x-3} = 0$ if $x =$ ·········

The rational number $\dfrac{x-5}{x} = 0$ if $x =$ ·········

Evaluation

Complete each of the following:

1 If $\dfrac{5}{a}$ is a rational number, then $a \neq$ ·········

2 The number $\dfrac{3}{x-2}$ is a rational number if $x \neq$ ·········

3 The number $\dfrac{2}{3x}$ is a rational number if $x \neq$ ·········

4 The rational number $\dfrac{4-x}{x-3} = 0$ if $x =$ ·········

5 The rational number $\dfrac{x-5}{x} = 0$ if $x =$ ·········

Homework

School book page (　　) , Questions number (　　)

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Day	Date	Class	Period	Algebra – Unit 1
				Lesson 1 **Different forms of rational number**

Teaching Strategies	
Brain storming	
Problem Solving	
Team Teaching	
Role-playing	
Work Groups	
Team Teaching	

Lesson Objectives: -

By the end of the lesson, students will be able to:

1. Find different forms of a rational number.

2. Convert between the different forms of rational numbers

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Student's book	
Workbook	
Teacher's Guide	
Library	
Board	
Data show	

Warm Up: (5 Min.)

Which of the following numbers is rational and which is not rational ?

$\frac{2}{3}$, zero , 6.5 , -1.8 , $12\frac{5}{6}$, $\frac{2-2}{3}$, $\frac{4}{5-5}$, 3^2 , $(-4)^{\text{zero}}$

Which of the following numbers is an integer ?

$\frac{15}{5}$, $\frac{4}{8}$, $-\frac{35}{7}$, $-\frac{14}{14}$, $-\frac{24}{5}$, $\frac{0}{5}$, $3\frac{1}{4}$

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Presentation: (5 Min.)

The rational number $\frac{a}{b}$ can be written in the form of another rational number $\frac{c}{d}$ equal to it by applying the following property :

The value of the rational number $\frac{a}{b}$ does not change if its two terms are multiplied or divided by an integer $\neq$ zero.

$\frac{3}{7} = \frac{3 \times 2}{7 \times 2} = \frac{6}{14}$, $\frac{3}{7} = \frac{3 \times 3}{7 \times 3} = \frac{9}{21}$

Write in three other forms each of the following rational numbers

Associated Activity	
Meetings	
Website	
Research	
Reading	

1 $\frac{2}{3}$ **2** $\frac{16}{64}$

Activity (1): (10 Min.)

Writing the rational number in the form of percentage	Changing a rational number from the form $\frac{a}{b}$ to a decimal form
1 $\frac{9}{20} = \frac{9 \times 5}{20 \times 5} = \frac{45}{100} = 45\%$	**1** $\frac{2}{5} = \frac{2 \times 2}{5 \times 2} = \frac{4}{10} = 0.4$
5 $3.2 = \frac{32}{10} = \frac{32 \times 10}{10 \times 10} = \frac{320}{100} = 320\%$	**2** $\left|-\frac{3}{8}\right| = \frac{3}{8} = \frac{3 \times 125}{8 \times 125} = \frac{375}{1000} = 0.375$
Write each of the following numbers in the form of percentage	*Write in the form of decimal number*
1 $\frac{4}{5}$ **2** $\frac{3}{1000}$ **3** 2.5	**1** $\frac{3}{4}$ **2** $\frac{11}{20}$

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Brain storming	
Problem Solving	
Team Teaching	
Role-playing	
Work Groups	
Team Teaching	

Activity (2): (10 Min.)

Using a calculator , write each of the following rational numbers in the form of a recurring decimal :

1 $\frac{2}{3}$ **2** $\frac{2}{11}$ **3** $5\frac{71}{333}$

1 Using the calculator , we get that :

$\frac{2}{3} = 0.6666666667$ **i.e.** $\frac{2}{3} = 0.\dot{6}$

2 Using the calculator , we get that :

$\frac{2}{11} = 0.1818181818$ **i.e.** $\frac{2}{11} = 0.\dot{1}\dot{8}$

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Workbook	
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Data show	

Activity (3): (10 Min.)

Write the following rational numbers as a decimal and a percentage

1 $\frac{1}{6}$ **2** $2\frac{1}{2}$ **3** $-\frac{3}{20}$

4 $\frac{5}{9}$ **5** $7\frac{3}{16}$ **6** $\frac{16}{3}$

Teaching sources	
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Teacher	
Library	
Teacher's Guide	

Associated Activity	
Meetings	
Website	
Research	
Reading	

Activity (4): (10 Min.)

Write each rational number in the form $\frac{a}{b}$:

1 -5 **2** zero   **3** 0.75 **4** -0.01

5 5.4 **6** 30% **7** 4.5% **8** $8\frac{2}{3}$

Evaluation

Choose the correct answer:

(1) If $\frac{4}{5} = \frac{20}{x}$, then $x = \ldots\ldots$

   (a) 25   (b) –25   (c) 5   (d) 100

(2) The number $\frac{a-6}{a-4}$ is not rational number if a = $\ldots\ldots$

   (a) 6   (b) 4   (c) 1   (d) zero

(3) The rational number $\frac{a}{b}$ is an integer if $\ldots\ldots$

   (a) a < b   (b) a > b

   (c) b is a divisor of a   (d) a is a divisor of b

(4) $0.\dot{5}\dot{7} = \ldots\ldots$

   (a) $\frac{57}{100}$ (b) $\frac{57}{99}$ (c) $\frac{575}{1000}$ (d) $\frac{19}{33}$

Homework

School book page (**) , Questions number (**

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Day	Date	Class	Period	Algebra – Unit 1
				Lesson 2
				Comparing and ordering rational
				numbers

Lesson Objectives: -

By the end of the lesson, students will be able to:

1. **Compare two rational numbers.**

2. **Order rational numbers ascendingly and descendingly.**

3. **Represent rational numbers on the number line.**

Warm Up: (5 Min.)

Each rational number is represented by a unique point on the number line.

The equal rational numbers are all represented by the same point on the number line.

The positive rational numbers are represented on the number line by points lying on the right side of the point which represents the number zero and the negative rational numbers are represented by points lying on the left side of the point which represents the number zero.

Presentation: (5 Min.)

First representing rational number on number line for example $\frac{7}{5}$

Second Comparing rational number

* Positive rational number > Negative rational number

* Positive rational number> zero   * Negative rational number < zero

$\frac{1}{4} > -\frac{5}{6}$ (Because $\frac{1}{4}$ is positive , $-\frac{5}{6}$ is negative)

Activity (1): (10 Min.)

[1] Complete using (<), (>) or (=):

❶ $\frac{2}{3}$ ◯ $\frac{1}{3}$ ❺ $\frac{2}{3}$ ◯ $\frac{4}{5}$ ❾ $-4\frac{1}{2}$ ◯ -5

❷ $\frac{4}{5}$ ◯ $\frac{3}{5}$ ❻ $\frac{1}{2}$ ◯ zero   ❿ $4\frac{1}{2}$ ◯ 5

❸ $\frac{4}{9}$ ◯ 1 ❼ $-\frac{1}{2}$ ◯ zero   ⓫ $\left|-\frac{15}{2}\right|$ ◯ $7\frac{1}{2}$

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Brain storming	
Problem Solving	
Team Teaching	
Role-playing	
Work Groups	
Team Teaching	

Activity (2): (10 Min.)

Arrange the following rational numbers ascendingly :

$$-\frac{2}{3} \;,\; \frac{3}{4} \;,\; -\frac{7}{12} \;,\; \frac{5}{6} \;,\; -1$$

Since L.C.M. of the denominators = 12

, then $-\frac{2}{3} = -\frac{8}{12}$, $\frac{3}{4} = \frac{9}{12}$, $\frac{5}{6} = \frac{10}{12}$, $-1 = -\frac{12}{12}$

, then the numbers after converting their denominators are :

$$-\frac{8}{12} \;,\; \frac{9}{12} \;,\; -\frac{7}{12} \;,\; \frac{10}{12} \;,\; -\frac{12}{12}$$

Since $-12 < -8 < -7 < 9 < 10$, then $-\frac{12}{12} < -\frac{8}{12} < -\frac{7}{12} < \frac{9}{12} < \frac{10}{12}$ **i.e.** $-1 < -\frac{2}{3} < -\frac{7}{12} < \frac{3}{4} < \frac{5}{6}$

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Workbook	
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Library	
Board	
Data show	

Activity (3): (10 Min.)

Arrange the following rational numbers descendingly :

$$\frac{3}{10} \;,\; \frac{7}{30} \;,\; -\frac{1}{3} \;,\; -\frac{1}{5} \text{ and } \frac{4}{15}$$

Arrange the following rational numbers in an ascending order :

$$\frac{3}{4} \;,\; -\frac{5}{8} \;,\; -\frac{7}{12} \text{ and } \frac{2}{3}$$

Teaching sources	
School book	
Teacher	
Library	
Teacher's Guide	

Associated Activity	
Meetings	
Website	
Research	
Reading	

Activity (4): (10 Min.)

The density of rational numbers

Between every two different rational numbers there are an infinite number of rational numbers.

[5] Write a rational number in each of the following:

❶ $\frac{2}{5}$ < ...... < $\frac{3}{5}$ 　　　　 **❸** $-\frac{2}{3}$ < ...... < $-\frac{1}{3}$

❷ $-\frac{2}{3}$ < ...... < $-\frac{1}{3}$ 　　　　 **❹** $-\frac{2}{7}$ < ...... < $-\frac{3}{14}$

Write two rational numbers lying between:

1) $\frac{1}{2} \text{ and } \frac{4}{5}$ 　　 **2)** $-\frac{3}{4} \text{ and } -\frac{2}{3}$ 　　 **3)** $0.3 \text{ and } \frac{3}{5}$

Evaluation

Put the suitable sign " > , < or = " in the space in each of the following :

1 $\frac{1}{4}$ .... $\frac{1}{6}$ 　　　 **2** $-\frac{5}{7}$ .... $-\frac{3}{2}$ 　　　 **3** $\frac{9}{5}$ .... $1\frac{2}{3}$

4 $-3\frac{1}{2}$ .... $-\frac{20}{6}$ 　　 **5** 0.5 .... $\frac{2}{8}$ 　　 **6** 1.6 .... $\left|-\frac{8}{5}\right|$

Write two rational numbers lying between :

1 $\frac{1}{2} \text{ and } \frac{4}{5}$ 　　　 **2** $-\frac{3}{4} \text{ and } -\frac{2}{3}$

Homework

School book page (　　　) , Questions number (

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Day	Date	Class	Period	Algebra – Unit 1
				Lesson 3 **Adding & Subtracting rational numbers**

Lesson Objectives: -

By the end of the lesson, students will be able to:

1. Represent rational number on the number line.

2. Deduce the properties of addition and subtraction in Q.

3. Use the properties to facilitate the operations.

Warm Up: (5 Min.)

(1) Identify and write four rational numbers between $\frac{3}{2}$ and $\frac{3}{4}$, such that one of them is an integer.

(2)

📖 Write the correct sign "< , = or > " :

① $-\frac{1}{2}$ ☐ zero   ② $-\frac{3}{4}$ ☐ $\frac{1}{4}$ ③ $-4\frac{1}{2}$ ☐ -5

Presentation: (5 Min.)

Properties of the addition operation in Q:

(1) Closure property: Q is closed under addition operation.

(2) Commutative property: a + b = b + a

(3) Associative property: (a + b) + c = a + (b + c)

(4) Additive identity: 0 + a = a + 0 = a

(5) Additive inverse: a + (-a) = zero

If $\frac{a}{b}$ and $\frac{c}{b}$ are two rational numbers , then $\frac{a}{b} + \frac{c}{b} = \frac{a+c}{b}$ If $\frac{a}{b}$ and $\frac{c}{d}$ are two rational numbers , then $\frac{a}{b} + \frac{c}{d} = \frac{ad+bc}{bd}$

Properties of the subtraction operation in Q:

Q is closed under subtraction operation, but the subtraction operation in Q is not commutative, not associative, has no identity element and has no inverse.

Activity (1): (10 Min.)

Find the result of each of the following in the simplest form:

(1) $\frac{3}{7} + \frac{2}{7} = \dots$ (2) $\frac{7}{8} - \frac{3}{8} = \dots$

(3) $\frac{1}{4} + \frac{25}{8} = \dots$ (4) $-\frac{3}{10} + \left(-\frac{2}{5}\right) = \dots$

(5) $-\frac{9}{12} + \frac{3}{16} = \dots$ (6) $\frac{2}{3} - 0.\dot{3} = \dots$

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Teaching Strategies	
Brain storming	
Problem Solving	
Team Teaching	
Role-playing	
Work Groups	
Team Teaching	

Activity (2): (10 Min.)

Complete each of the following

(1) The remainder of subtracting $\frac{1}{5}$ from $\frac{6}{5}$ is ....

(2) The remainder of subtracting $\frac{1}{3}$ from $-\frac{4}{3}$ is ....

(3) The remainder of subtracting $-\frac{2}{3}$ from 0 is ....

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Activity (3): (10 Min.)

[5] Using the properties in Q, find out the result of each of the following in the simplest form:

1️⃣ $\frac{1}{4} + \frac{1}{2} + \frac{3}{4}$ 2️⃣ $\frac{2}{7} + \frac{3}{4} + \frac{5}{7} + \frac{1}{4}$

3️⃣ $\frac{5}{4} + \left(-\frac{13}{5}\right) + \left(-\frac{25}{4}\right) + \frac{28}{5}$ 4️⃣ $\frac{5}{8} + \left(-\frac{3}{4}\right) + \frac{3}{8} + \frac{3}{4}$

5️⃣ $\frac{2}{13} + \frac{1}{5} + \frac{11}{13} + \left(-\frac{6}{5}\right)$ 6️⃣ $-\frac{3}{7} + \frac{1}{2} + \left(-\frac{1}{14}\right)$

Teaching sources	
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Teacher	
Library	
Teacher's Guide	

Associated Activity	
Meetings	
Website	
Research	
Reading	

Activity (4): (10 Min.)   Complete

(1) The additive identity element in Q is ....

(2) The additive inverse of $\frac{3}{7}$ is ....

(3) The additive inverse of $-\frac{4}{9}$ is ....

(4) $\frac{-6}{-11}$ is the additive inverse of the number ....

(5) The additive inverse of $\left(\frac{-2}{7}\right)^{zero}$ is ....

(6) The additive inverse of $\left|\frac{-4}{5}\right|$ is ....

(7) The additive inverse of zero is ....

Evaluation

Choose the correct answer:

(1) $\frac{3}{4} + 50\% = $.....

(a) 75%   (b) 150%   (c) $\frac{5}{4}$ (d) $\frac{3}{2}$

(2) Subtracting $\frac{1}{5}$ from $\frac{6}{5}$ gives ....

(a) 1   (b) -1   (c) $\frac{-3}{5}$ (d) $\frac{7}{5}$

(3) Subtracting $\frac{1}{7}$ from zero gives ....

(a) zero   (b) $\frac{1}{7}$ (c) $\frac{-1}{7}$ (d) $\frac{6}{7}$

(4) ...... $-\frac{1}{2} = -1$

(a) $1\frac{1}{2}$ (b) $\frac{1}{2}$ (c) $-\frac{1}{2}$ (d) $-1\frac{1}{2}$

(5) $\frac{3}{5} + ... = zero$

(a) $\frac{3}{5}$ (b) $\frac{-3}{5}$ (c) 1   (d) zero

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Homework

School book page (   ) , Questions number (

Day	Date	Class	Period	Algebra – Unit 1
				Lesson 3 **Exercises on adding & subtracting rational numbers**

Teaching Strategies	
Brain storming	
Problem Solving	
Team Teaching	
Role-playing	
Work Groups	
Team Teaching	

Lesson Objectives: -

By the end of the lesson, students will be able to:

1. Represent rational number on the number line.

2. Deduce the properties of addition and subtraction in Q.

3. Use the properties to facilitate the operations.

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Student's book	
Workbook	
Teacher's Guide	
Library	
Board	
Data show	

Warm Up: (5 Min.)

📖 Write the property of addition used in each of the following :

1. $\frac{7}{2} + \frac{9}{16} = \frac{9}{16} + \frac{7}{2}$

2. $[\frac{2}{3} + (-\frac{1}{3})] + (-\frac{1}{6}) = \frac{2}{3} + [(-\frac{1}{3}) + (-\frac{1}{6})]$

....

3. $\frac{3}{4} + (-\frac{3}{4}) = $ zero

4. zero $+ (-\frac{3}{4}) = -\frac{3}{4}$

....

Teaching sources	
School book	
Teacher	
Library	
Teacher's Guide	

Presentation: (5 Min.)

Choose the correct answer

Subtracting $-\frac{3}{2}$ from zero gives ··········

(a) zero   (b) $\frac{3}{2}$ (c) $-\frac{3}{2}$ (d) 1

·········· $-\frac{1}{2} = -1$

(a) $1\frac{1}{2}$ (b) $\frac{1}{2}$ (c) $-\frac{1}{2}$ (d) $-1\frac{1}{2}$

$\frac{3}{5} + $ ·········· $ = $ zero

(a) $\frac{3}{5}$ (b) $-\frac{3}{5}$ (c) 1   (d) zero

If $A + \frac{6}{7} = $ zero , then $A = $ ··········

(a) zero   (b) 1   (c) $\frac{6}{7}$ (d) $-\frac{6}{7}$

Associated Activity	
Meetings	
Website	
Research	
Reading	

Activity (1): (10 Min.)

Find the sum of each of the following

1. $\frac{4}{7} + $ zero

2. zero $+ (-\frac{7}{10})$

3. zero $- (-\frac{17}{4})$

4. $[\frac{1}{4} + (-\frac{1}{4})] + \frac{3}{4}$

5. $\frac{5}{6} + (-\frac{3}{6} + \frac{3}{6})$

6. $[\frac{2}{9} + (-\frac{4}{9})] + (-\frac{3}{9})$

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Teaching Strategies	
Brain storming	
Problem Solving	
Team Teaching	
Role-playing	
Work Groups	
Team Teaching	

Activity (2): (10 Min.)

If $x = \dfrac{5}{6}$, $y = -\dfrac{1}{3}$ and $z = \dfrac{1}{2}$, find the value of each of the following :

1 $x + z$

2 $x + y$

3 $x - y$

4 $(y + z) - x$

Teaching Aids	
Student's book	
Workbook	
Teacher's Guide	
Library	
Board	
Data show	

Activity (3): (10 Min.)

If $a = \dfrac{1}{2}$, $b = -\dfrac{3}{2}$, find the value of $(a - b)^3$

....

....

....

....

Teaching sources	
School book	
Teacher	
Library	
Teacher's Guide	

Associated Activity	
Meetings	
Website	
Research	
Reading	

Activity (4): (10 Min.)

Using the properties in Q, find out the result of each of the following in the simplest form:

(1) $\dfrac{-3}{4} + \left(\dfrac{-3}{5}\right) + \left(-2\dfrac{1}{4}\right) + \dfrac{3}{5}$

(3) $\left|-\dfrac{1}{2}\right| + \left(-\dfrac{2}{4}\right) + \dfrac{6}{4} + \dfrac{1}{2}$

(2) $\dfrac{2}{13} + \dfrac{1}{5} + \dfrac{11}{13} + \left(\dfrac{-6}{5}\right)$

(4) $\dfrac{5}{8} + \dfrac{1}{3} + \dfrac{3}{8} + \left(\dfrac{-1}{3}\right)$

Evaluation

Choose the correct answer:

(1) The remainder of subtracting $\dfrac{1}{5}$ from $\dfrac{6}{5}$ is ....

(2) $\dfrac{1}{5} + ... = 0$

(3) The additive inverse of $\left(\dfrac{-2}{7}\right)^{zero}$ is ....

(4) The additive inverse of $\left|\dfrac{-4}{5}\right|$ is ....

(5) $\dfrac{3}{7} + \dfrac{2}{7} = ...$

(6) $-\dfrac{3}{5} - \dfrac{9}{5} = ...$

Homework

School book page (   ) , Questions number (   )

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Day	Date	Class	Period	Algebra – Unit 1
				Lesson 4 **Multiplying & dividing rational numbers**

Teaching Strategies	
Brain storming	
Problem Solving	
Team Teaching	
Role-playing	
Work Groups	
Team Teaching	

Lesson Objectives: -

By the end of the lesson, students will be able to:

1. **Deduce the properties of multiplication and division in Q.**

2. **Carry out some operations on rational numbers.**

Teaching Aids	
Student's book	
Workbook	
Teacher's Guide	
Library	
Board	
Data show	

Warm Up: (5 Min.)

$$\ldots\ldots - \frac{1}{2} = -1$$

(a) $1\frac{1}{2}$ (b) $\frac{1}{2}$ (c) $-\frac{1}{2}$ (d) $-1\frac{1}{2}$

$$\frac{3}{5} + \ldots\ldots = zero$$

(a) $\frac{3}{5}$ (b) $\frac{-3}{5}$ (c) 1 (d) zero

Teaching sources	
School book	
Teacher	
Library	
Teacher's Guide	

Associated Activity	
Meetings	
Website	
Research	
Reading	

Presentation: (5 Min.)
Properties of operations:

Property \ operation	Addition	Subtraction	Multiplication	Division
Closure	✓	✓	✓	✗
Commutative	✓	✗	✓	✗
Associative	✓	✗	✓	✗
Identity element	✓ (0)	✗	✓ (1)	✗
Inverse	✓	✗	✓ except (0)	✗

The number	The additive inverse	The multiplicative inverse
$\frac{3}{7}$	………	………
$\frac{-4}{9}$	………	………
-6	………	………

Activity (1): (10 Min.)
Put (✓) for the correct statement and (✗) for the incorrect one:

(1) Every rational number has a multiplicative inverse.   ( )

(2) The multiplicative inverse of the number $\frac{0}{7}$ is $\frac{7}{0}$.   ( )

(3) The multiplicative inverse of the number $2\frac{1}{5}$ is $5\frac{1}{4}$.   ( )

(4) The multiplicative inverse of the number $\left(\frac{2}{7} + \frac{3}{5}\right)$ is $\frac{35}{31}$.   ( )

Mr. Mohamed Abdelhamid

Teaching Strategies	
Brain storming	
Problem Solving	
Team Teaching	
Role-playing	
Work Groups	
Team Teaching	

Activity (2): (10 Min.)

(1) $\frac{3}{2} \times \left(\frac{-4}{5}\right) = \frac{-4}{5} \times \ldots$ .... property

(2) $\frac{2}{3} \times \frac{3}{2} = \ldots$ .... property

(3) $7 \times \frac{\ldots}{7} = 1$ .... property

(4) $-\frac{4}{5} \times \ldots = -\frac{4}{5}$ .... property

Teaching Aids	
Student's book	
Workbook	
Teacher's Guide	
Library	
Board	
Data show	

Activity (3): (10 Min.)

Find out the result of each of the following in the simplest form:

(1) $\frac{3}{5} \times \frac{2}{7} = \ldots$

(2) $\frac{-1}{2} \times \frac{2}{3} = \ldots$

(3) $-4\frac{2}{7} \div 1\frac{1}{14} = \ldots$

(4) $-4\frac{1}{3} \div \left(-3\frac{1}{4}\right) = \ldots$

Teaching sources	
School book	
Teacher	
Library	
Teacher's Guide	

Associated Activity	
Meetings	
Website	
Research	
Reading	

Activity (4): (10 Min.)

Using the distribution property, find out the result of each of the following in the simplest form:

(1) $\frac{5}{12} \times 3 + \frac{5}{12} \times 9$

(2) $\frac{4}{9} \times 11 + \frac{4}{9} \times 16$

(3) $\frac{6}{37} \times 7 + \frac{6}{37} \times 5 + \frac{6}{37} \times (-11)$

(4) $\frac{7}{12} \times 5 + \frac{7}{12} \times 9 - \frac{7}{12} \times 2$

Evaluation

Complete each of the following:

(1) The multiplicative inverse of $\frac{-2}{3}$ is …………

(2) The multiplicative inverse of -6 is …………

(3) The multiplicative inverse of $3\frac{1}{2}$ is …………

(4) The rational number $\frac{(a-1)}{5}$ has a multiplicative inverse if a≠……

$\left(-\frac{2}{3}\right) \times \frac{5}{8} = \ldots$ $\frac{4}{5} \times \left(-\frac{5}{7}\right) = \ldots$

Homework

School book page (   ) , Questions number (   )

Mr. Mohamed Abdelhamid

Day	Date	Class	Period	Algebra – Unit 1
				Lesson 5 **Applications on rational numbers**

Lesson Objectives: -

By the end of the lesson, students will be able to:

1. Find a rational number lying at a half of the way between 2 rational numbers.

2. Find a rational number lying at a third of the way between 2 rational numbers.

3. Find a rational number lying at a quarter of the way between 2 rational numbers.

Warm Up: (5 Min.)

If $x = \frac{3}{4}$ and $y = \frac{-5}{3}$, find in the simplest form the value of the expression: $\frac{x-y}{x+y}$

If $a = 2$, $b = \frac{1}{2}$ and $c = \frac{3}{2}$, find in the simplest form the value of:
$(a - b) \div c$

Presentation: (5 Min.)

- The distance between two numbers 2 and 5 is:
  |2-5| = |5-2| = 3 length units

- The distance between two numbers -2 and 3 is:
  |-2-3| = |3+2| = 5 length units

- From the side of the smallest number: s + f (g – s)

- From the side of the greatest number: g - f (g – s)

Find the rational number lying at the middle of the way between 3 and 7.

The number = s + f (g − s) = $3 + \frac{1}{2}(7 − 3) = 5$ **Or**

The number = g – f (g – s) = $7 − \frac{1}{2}(7 − 3) = 5$

Activity (1): (10 Min.)

Find the rational number lying at:

(1) One third of the way between $\frac{4}{7}$ *and* $1\frac{3}{4}$ from the side of the smaller number.

(2) One fifth of the way between $\frac{-2}{3}$ *and* $\frac{-3}{5}$ from the side of the smaller number.

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Teaching Strategies	
Brain storming	
Problem Solving	
Team Teaching	
Role-playing	
Work Groups	
Team Teaching	

Activity (2): (10 Min.)

Find the rational number lying at the half-way between $\frac{2}{5}$ and $\frac{3}{7}$.

Find the rational number that lying at One third -way between $\frac{5}{7}$ and $\frac{3}{4}$.

Teaching Aids	
Student's book	
Workbook	
Teacher's Guide	
Library	
Board	
Data show	

Activity (3): (10 Min.)

Find the rational number lying at:

(1)   One fourth of the way between $\frac{5}{7}$ *and* $\frac{-3}{7}$ from the side of the smaller number.

(2)   One third of the way between $\frac{4}{7}$ $and\ 1\frac{3}{4}$ from the side of the smaller number.

Teaching sources	
School book	
Teacher	
Library	
Teacher's Guide	

Associated Activity	
Meetings	
Website	
Research	
Reading	

Activity (4): (10 Min.)

Choose the correct answer:-

1 If $a \times \frac{b}{2} = \frac{a}{2}$, $a \neq 0$, then $b = \cdots\cdots$

(a) $\frac{a}{2}$ (b) 0   (c) a   (d) 1   (e) $-a$

2 If $\frac{x}{3} - 4 = 6$, then $\frac{x}{3} + \frac{2}{3} = \cdots\cdots$

(a) 1   (b) x (c) $\frac{32}{3}$ (d) 10   (e) $\frac{2x}{9}$

3 If $\frac{x}{y} = 1$, then $2x - 2y = \cdots\cdots$

(a) 4   (b) 2   (c) 1   (d) 0   (e) $\frac{1}{2}$

Evaluation

Choose the correct answer:-

4 If $x + \frac{2}{x} = 5 + \frac{2}{5}$, then $x = \cdots\cdots$

(a) $\frac{1}{5}$ (b) $\frac{4}{5}$ (c) 1   (d) $\frac{5}{2}$ (e) 5

5 If $5a = 45$ and $ba = 1$, then $b = \cdots\cdots$

(a) $\frac{1}{45}$ (b) $\frac{1}{9}$ (c) $\frac{1}{5}$ (d) 5   (e) 9

Find three rational numbers lying between $\frac{3}{2}$ and $\frac{3}{4}$, such that one of them is an integer.

Homework

School book page (   ) , Questions number (   )

Mr. Mohamed
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Day	Date	Class	Period	Algebra – Unit 2
				Lesson 1 **Algebraic Terms & Expressions**

Lesson Objectives: -

By the end of the lesson, students will be able to:

1. Know the concept of term and expression.
2. Determine the degree of the term and expression.
3. Determine the coefficient of a term.

Warm Up: (5 Min.)

(1) If $a \times \frac{b}{2} = \frac{a}{2}$, $a \neq 0$, then b = ……

(2) If $\frac{x}{3} - 4 = 6$, then $\frac{x}{3} + \frac{2}{3}$ = ……

(3) If $5a = 45$ and $ba = 1$, then b = ………

Presentation: (5 Min.)

The algebraic term is formed from the product of two or more factors.

The degree of the algebraic term is the sum of the indices of the algebraic factors in this term.
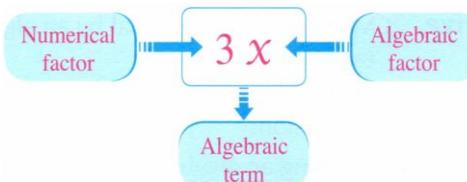
Remark: Any number is an algebraic term of zero degree.

The algebraic expression consists of an algebraic term (monomial) or more.

The algebraic term that has no algebraic factors is called the absolute term as the term -1 in the expression : $x^2 - 1$

Activity (1): (10 Min.)

Algebraic term	$2\,a\,b^2$	$7\,a\,b^3\,c$	$-8\,x^2\,b$	3	$(-2)^3$	$\frac{1}{2}\,x^3y\,z^2$
Coefficient						
Degree						

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Activity (2): (10 Min.)

The Algebraic expression	No. of terms	Name	Degree
-3 a^5 b			
$3x^2$ + y			

Activity (3): (10 Min.)

*Complete each of the following

1. **The coefficient of algebraic term 3 x^2 y is ………… and its degree is ………**

2. The coefficient of algebraic term $\frac{1}{2} x^3 y z^2$ is ………and its degree is ………

3. **The degree of the absolute term in an algebraic expression is ……**

4. The algebraic expression $5x^2 + 3$ is of the …………… degree.

Activity (4): (10 Min.)

Write the algebraic term that represent the area of each shape:
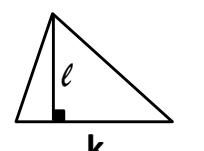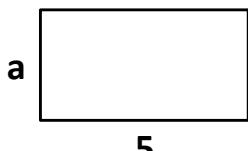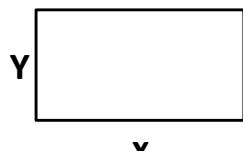
Y [ ] x ....

a [ ] 5 ....

ℓ k ....

Evaluation

Choose the correct answer

(1) The degree of the algebraic term $2x^3y^2$ is ………
(a) second   (b) third   (c) fourth   (d) fifth

(2) The coefficient of the algebraic term $3xy^3z^4$ is ………
(a) 2   (b) 3   (c) 6   (d) 7

(3) The degree of the algebraic expression $3x^2 + 3x^4$ equals to the degree of the ………
(a) $5xy+3y^2z$ (b) $2x^2y^2 + 3x^2y$ (c) $2xy + 3x^4z$ (d) $5a^2b + 4ab^2$

(4) The number of terms of the algebraic expression $3x^2+5xy+6$ is …
(a) 1   (b) 2   (c) 3   (d) 4

Homework

School book page (   ) , Questions number (   )

Mr. Mohamed Abdelhamid

Day	Date	Class	Period	Algebra – Unit 2
				Lesson 2
				Like algebraic terms

Lesson Objectives: -

By the end of the lesson, students will be able to:

1) Arrange the terms of an expression ascendingly and descendingly.
2) Differentiate between like terms and unlike terms.
3) Find out the results of adding and subtracting like terms.

Teaching Aids	
Student's book	
Workbook	
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Board	
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Warm Up: (5 Min.)

Arrange the terms of the following algebraic expressions according to the descending order of the indices of a:

(1) $5a + a2 - 7 + a3$ ....

(2) $2 a2 b2 + 5 b a3 - 3 b3 a$ ....

Teaching sources	
School book	
Teacher	
Library	
Teacher's Guide	

Associated Activity	
Meetings	
Website	
Research	
Reading	

Presentation: (5 Min.)

☞ The algebraic terms are said to be like if they having the same symbols and the same degree. Such as:

Like terms	Unlike terms
☞ 2a , a and -5a. ☞ $2x^2y$, $4yx^2$ and $-\frac{1}{2}x^2y$	☞ 2x , $-3x^2$ and $7x^3$ ☞ $4x^2$, 5xy and y^2

Put (✓) for the correct statement and (✗) for the incorrect one:

(1)   The two algebraic terms x^2 and 2x are like terms. (   )

(2)   The two algebraic terms $3 a b^2$ and $- a b^2$ are like terms. (   )

Activity (1): (10 Min.)
Find the result of each of the following:

(1) $3 x + x =$ ....

(2) $7 y - y =$ ....

(3) $3 x + 2 x =$ ....

(4) $5 y - 3 y =$ ....

(5) $4 z - 11 z =$ ....

(6) $- 7 x - 2 x =$ ....

Mr. Mohamed Abdelhamid

Teaching Strategies	
Brain storming	
Problem Solving	
Team Teaching	
Role-playing	
Work Groups	
Team Teaching	

Activity (2): (10 Min.)

Answer each of the following:

(1) Subtract y^2 from $-3y^2$ ....

(2) What is the increase $3a^2b$ of a^2b? ....

(3) What is the decrease $-3ab$ of $2ab$? ....

Teaching Aids	
Student's book	
Workbook	
Teacher's Guide	
Library	
Board	
Data show	

Activity (3): (10 Min.)

Complete:

(1) The result of subtracting $7y^3$ from zero is ....

(2) The result of subtracting $-3a$ from $2a$ is ....

(3) $7x$ increases $-3x$ by ....

(4) $2x$ decreases $4x$ by ....

(5) .... $+ 2a^2 = 7a^2$

Teaching sources	
School book	
Teacher	
Library	
Teacher's Guide	

Associated Activity	
Meetings	
Website	
Research	
Reading	

Activity (4): (10 Min.)

If the sum of two terms is $12 x^2 y$ one of them is $4 x^2 y$. Find the other term.

....

Reduce to the simplest form:

(1) $3a + 2b + 5a + 4b = $ ....

(2) $2x - 4y - 9x - 3y = $ ....

(3) $3x - 5y - x + 2y = $ ....

(4) $19 m - 4 n + 11 m - 17 n + 9 n = $ ....

(5) $4 a + a b + 5 a - 2 b + 6 b - 3 a = $ ....

Evaluation

Choose the correct answer

1 Which of the following are two like algebraic terms ?

(a) $x^2 , 2 x$ (b) $7 x^2 , 2 x^7$ (c) $3 b^2 a , - a b^2$ (d) $2 a^2 , 2 b^2$

2 Which of the following algebraic terms is like to the algebraic term $2 x^2 y$?

(a) $2 y^2 x$ (b) $y x^2$ (c) $2 x^2$ (d) $x^2 y^2$

3 $7 x^2 - 2 x^2 = $ ....

(a) 5 (b) $5 x^2$ (c) $5 x$ (d) $9 x^2$

4 $2 x y - 2 y x = $ ....

(a) $x y$ (b) $2 x y$ (c) $4 y x$ (d) zero

Mr. Mohamed Abdelhamid

Homework

School book page (   ) , Questions number (   )

Day	Date	Class	Period	Algebra – Unit 2
				Lesson 3 **Adding and Subtracting Expressions**

Teaching Strategies	
Brain storming	
Problem Solving	
Team Teaching	
Role-playing	
Work Groups	
Team Teaching	

Lesson Objectives: -

By the end of the lesson, students will be able to:

1. Add algebraic expressions.

2. Subtract algebraic expressions.

Teaching Aids	
Student's book	
Workbook	
Teacher's Guide	
Library	
Board	
Data show	

Warm Up: (5 Min.)

Complete each of the following :

1. $\cdots + 2a^2 = 7a^2$

2. $3x^2 - \cdots = x^2$

3. $2m^2 + \cdots = \text{zero}$

4. $5a^2b - \cdots = 7a^2b$

Teaching sources	
School book	
Teacher	
Library	
Teacher's Guide	

Associated Activity	
Meetings	
Website	
Research	
Reading	

Presentation: (5 Min.)

Add $2x - 5z + y$ and $7x + 4y - 2z$

Solution

Using the horizontal method

The sum $= 2x - 5z + y + 7x + 4y - 2z$

$= (2x + 7x) + (-5z - 2z) + (y + 4y)$

$= 9x - 7z + 5y$

Using the vertical method

$2x - 5z + y$

$\underline{7x - 2z + 4y}$

The sum $= 9x - 7z + 5y$

Activity (1): (10 Min.)

Find the sum of each of the following :

1. 📖 $3x - 2y + 5$, $x + 2y - 2$

2. $3\ell - 4m + 5n$, $4m - 5n - \ell$

3. 📖 $3n^2 + 5n - 6$, $-n^2 - 3n + 3$

4. $5m^2 + 2\ell m$, $3m^2 - 2\ell m$

Mr. Mohamed
Abdelhamid

Teaching Strategies	
Brain storming	
Problem Solving	
Team Teaching	
Role-playing	
Work Groups	
Team Teaching	

Activity (2): (10 Min.)

Subtract :

1) $x - 2$ from $2x - 5$

2) $2x + 6y - 7$ from $2x - 5y + 2$

3) $3x^2 - 1 - 5x$ from $1 - 5x + 6x^2$

Teaching Aids	
Student's book	
Workbook	
Teacher's Guide	
Library	
Board	
Data show	

Activity (3): (10 Min.)

In the following figure, calculate the total surface area of the two solids together :
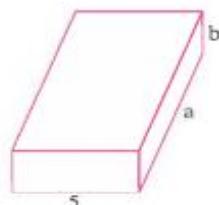
First solid
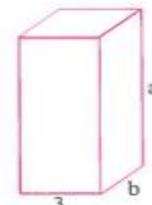
Second solid

Activity (4): (10 Min.)

What is the expression which should be subtracted from $2x - 3y + 6z - \ell$ to get $5z - 4y + 3x - 2\ell$?

If the sum of two algebraic expressions is $5x - 7y + 9$ and if one of the two expressions is $2y + 3x - 4$, find the other expression.

Evaluation

(A) Find the sum

1) $3x - 2y + 5$ and $x + 2y - 2$

2) $3n^2 + 5n - 6$ and $-n^2 - 3n + 3$

(B) Subtract $x + x^2 - 5$ from $2x^2 + x - 3$, then find the numerical value of the result when x = 6

Homework

School book page (   ) , Questions number (   )

Mr. Mohamed
Abdelhamid

Day	Date	Class	Period	Algebra – Unit 2
				Lesson 4 **Multiplying and Dividing Algebraic Terms**

Teaching Strategies	
Brain storming	
Problem Solving	
Team Teaching	
Role-playing	
Work Groups	
Team Teaching	

Lesson Objectives: -

By the end of the lesson, students will be able to:

1) Multiply algebraic terms.

2) Divide algebraic terms.

Teaching Aids	
Student's book	
Workbook	
Teacher's Guide	
Library	
Board	
Data show	

Warm Up: (5 Min.)

1) Subtract $x + x^2 - 5$ from $2x^2 + x - 3$, then find the numerical value of the result when $x = 6$

2) Add $3x + x^2 - 10$ to $5x^2 + 2x - 7$, then find the numerical value of the result when $x = 6$

Teaching sources	
School book	
Teacher	
Library	
Teacher's Guide	

Associated Activity	
Meetings	
Website	
Research	
Reading	

Presentation: (5 Min.)

When multiplying the algebraic terms , follow the following :

1 Multiply the coefficients using the signs rule.

2 Multiply the symbols by adding the indices of symbols which have like bases.

For example:

- $2 a \times 5 b = (2 \times 5) \times (a \times b) = 10 a b$

- $(5 X^2) \times (3 X) = (5 \times 3) \times (X^2 \times X) = 15 X^3$

1 The quotient of two equal factors is 1

Hence , we can cancel the equal factors in division operation.

For example: $\dfrac{-15 a^5 b^3 c^2}{3 a^5 b^3 c} = -5 c$

Activity (1): (10 Min.)

Multiply

(1) $5x \times 3y$ = ………………………………

(2) $(-3a) \times 7c$ = ………………………………

(3) $2x \times (-3x)$ = ………………………………

(4) $(-8y^5) \times (-7y^4)$ = ………………………………

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Teaching Strategies	
Brain storming	
Problem Solving	
Team Teaching	
Role-playing	
Work Groups	
Team Teaching	

Activity (2): (10 Min.)

If the symbols represent non-zero integers, find the quotient of each of the following:

(1) $12x \div (-x)$ 　　　　(2) $(-14x^2) \div 7x$

(3) $(-25a^6) \div (-5a^2)$ 　　　　(4) $24c^5 \div (-24c^5)$

(5) $9x^5y^4 \div 6x^3y$

Teaching Aids	
Student's book	
Workbook	
Teacher's Guide	
Library	
Board	
Data show	

Activity (3): (10 Min.)

Calculate the perimeter and the area of each figure of the following :
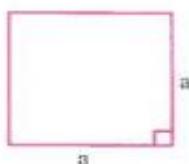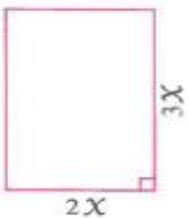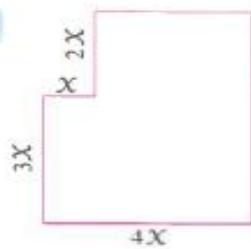
Teaching sources	
School book	
Teacher	
Library	
Teacher's Guide	

Associated Activity	
Meetings	
Website	
Research	
Reading	

Activity (4): (10 Min.)

Complete each of the following

1. $36\, a^5\, b^8 = 12\, a^3\, b^2 \times \cdots\cdots$ 　　　 2. $9\, a^5 = 3\, a \times \cdots\cdots$

3. $-4\, c^3\, d^3 = 2\, c\, d^2 \times \cdots\cdots$ 　　　 4. $98\, a^7\, b^4 = \cdots\cdots \times 14\, a^7\, b$

5. $36\, a^8\, b^5 = 6\, a\, b^2 \times 3\, a^4\, b \times \cdots\cdots$ 　　　 6. $42\, x^4\, y^5 = 3\, x^2\, y \times 2\, x\, y \times \cdots\cdots$

7. $15\, x^2\, y^3 \div \cdots\cdots = 3\, x\, y^2$ 　　　 8. $\cdots\cdots \div (-4\, x^3\, y^2) = 16\, x^4\, y^4$

Evaluation

Choose the correct answer

1. $(2\, x) \times (5\, x) = \cdots\cdots$
   (a) $10\, x$ 　　　(b) $7\, x$ 　　　(c) $7\, x^2$ 　　　(d) $10\, x^2$

2. $3\, a^4\, b \times 5\, a^2\, b^2 \times 2\, a^3 = \cdots\cdots$
   (a) $60\, a^{11}\, b^3$ 　　(b) $30\, a^{10}\, b^2$ 　　(c) $150\, a^{10}\, b^3$ 　　(d) $30\, a^9\, b^3$

3. $-6\, x^3\, y \div 2\, x\, y = \cdots\cdots$
   (a) $-3\, x^3$ 　　(b) $-3\, x^2\, y$ 　　(c) $-3\, x^4\, y^2$ 　　(d) $-3\, x^2$

4. If $2\, b$ is the edge length of a cube , then its volume is $\cdots\cdots$
   (a) $4\, b^2$ 　　(b) $2\, b^3$ 　　(c) $4\, b^3$ 　　(d) $8\, b^3$

5. If the area of a rectangle is $24\, x^3$ and its length is $8\, x^2$, then its width is $\cdots\cdots$
   (a) $3\, x^5$ 　　(b) $3\, x$ 　　(c) $3\, x^2$ 　　(d) 3

Homework

School book page (　　　) , Questions number (　　　)

Mr. Mohamed Abdelhamid

Day	Date	Class	Period	Algebra – Unit 2
				Lesson 5 **Multiplying a monomial by an algebraic expression**

Teaching Strategies	
Brain storming	
Problem Solving	
Team Teaching	
Role-playing	
Work Groups	
Team Teaching	

Lesson Objectives: -

By the end of the lesson, students will be able to:

1) Multiply a term by an algebraic expression.
2) Find the numerical value of an expression.
3) Simplify an algebraic expression.

Teaching Aids	
Student's book	
Workbook	
Teacher's Guide	
Library	
Board	
Data show	

Warm Up: (5 Min.)

Complete

1. $\dfrac{y^5}{y^3} + y^2 = \cdots\cdots$

2. $(6\,x^3 \div 2\,x) - 2\,x = \cdots\cdots$

3. $(10\,x^2 + 5\,x^2) \div 5\,x = \cdots\cdots$

4. $(5\,a \div a) + \cdots\cdots = \text{zero}$

5. $81\,\ell^4 \div \cdots\cdots = 27\,\ell^3$

6. $\cdots\cdots \div 7\,a^3 = -5\,a^2$

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Associated Activity	
Meetings	
Website	
Research	
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Presentation: (5 Min.)

1. $b\,(-2\,a + a^2\,b)$

1. $b\,(-2\,a + a^2\,b) = -2\,a\,b + a^2\,b^2$

2. $-3\,a\,b\,(5\,a - 2\,b + 3)$

2. $-3\,a\,b\,(5\,a - 2\,b + 3) = -15\,a^2\,b + 6\,a\,b^2 - 9\,a\,b$

Activity (1): (10 Min.)

Find the following products:

(1) $2x(3x^2 + 4y^2)$

(2) $-5x(2x + y - 3z)$

(3) $3xy(2x^2 - 5x^2y - 4y^2)$

(4) $lm^2(l^2 - 3ml - 4m^2)$

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Team Teaching	
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Team Teaching	

Activity (2): (10 Min.)

Complete each of the following

1. $X (\cdots - 2X) = 6X - \cdots$
2. $3X (\cdots + 5y) = 6X^2 + \cdots$
3. $2X (\cdots - 5y) = 8X^3 - \cdots$
4. $3X (\cdots - 4Xy^2) = 15X^3 y - \cdots$
5. $-2ab (\cdots + 2a^2 b) = -6a^2 b^3 - \cdots$
6. $2X (3X - \cdots) = \cdots - 10X$

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Activity (3): (10 Min.)

Find

Simplify : $2a (3a - 1) + 3a (a + 2)$, then find the value of the result when $a = 1$

Simplify : $2a (3a + b) - 3b (a + b)$, then find the value of the result when $a = b = 1$

Simplify : $X (2X - y) - 2y (X - y)$, then find the numerical value of the result when $X = 2$ and $y = -1$

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Meetings	
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Activity (4): (10 Min.)

Find the algebraic expression which expresses the area of the coloured part in each of the following :
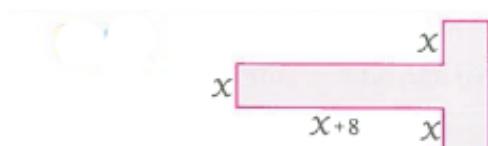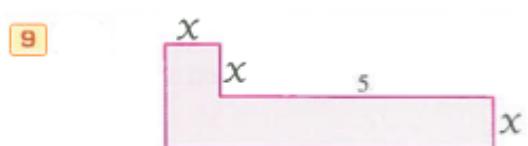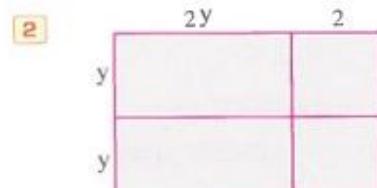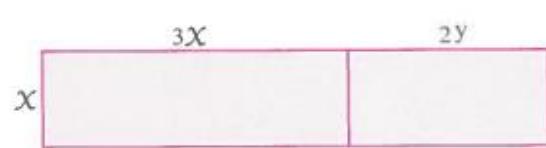
Evaluation

Simplify:

[a] $\frac{1}{3} x^2 (6x^2 - 9xy - 3y^2)$

[c] $\ell m^2 (\ell^2 - 3m\ell - 4m^2)$

[b] $2x^2 y (2x^2 - 3xy + y^2)$

(2) Simplify $2a(3a - 1) + 3a(a + 2)$, **then find the numerical value of the result when a = 1**

Homework

School book page ( ) , Questions number ( )

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Day	Date	Class	Period	Algebra – Unit 2
				Lesson 6 **Multiplying a binomial by an algebraic expression**

<table>
<tr><td>

Teaching Strategies

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Team Teaching	
Role-playing	
Work Groups	
Team Teaching	

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Lesson Objectives: -

By the end of the lesson, students will be able to:

1) Multiply a binomial by an expression directly.
2) Multiply by inspection.
3) Find the numerical value.

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Teaching Aids

Student's book	
Workbook	
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Library	
Board	
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Warm Up: (5 Min.)

Simplify: $3(1 - 2x) - (x^2 - 5x + 3) + 2x(x + 3)$, then find the numerical value of the expression when $x = -2$

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Teaching sources

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Teacher	
Library	
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Associated Activity

Meetings	
Website	
Research	
Reading	

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Presentation: (5 Min.)

$$(a + b)(c + d) = (a \times c) + (a \times d) + (b \times c) + (b \times d)$$

first $\times$ first	+	first $\times$ second	+	second $\times$ first	+	second $\times$ second

For Example

$$(x + 5)(2x - 3) = x(2x - 3) + 5(2x - 3)$$
$$= 2x^2 - 3x + 10x - 15$$
$$= 2x^2 + 7x - 15$$

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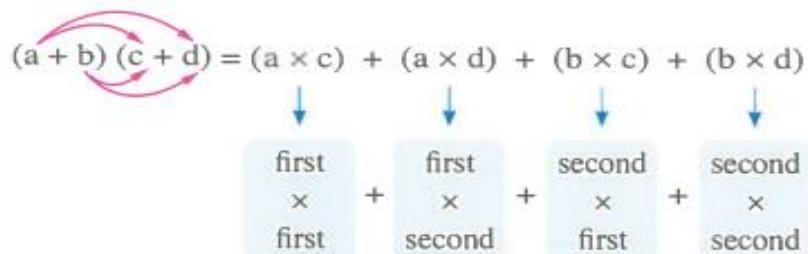
Activity (1): (10 Min.)

Find by direct product , the result of each of the following :

1 $(x + 2)(x + 4)$

2 $(y - 5)(y + 2)$

3 📖 $(5m - 2)(6m + 1)$

4 📖 $(4x + $ ~~Mx Mohamed~~
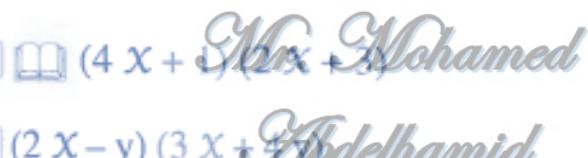
5 $(3a + 2b)(2a - 5b)$

6 $(2x - y)(3x + $ ~~Abdelhamid~~

Teaching Strategies	
Brain storming	
Problem Solving	
Team Teaching	
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Activity (2): (10 Min.)

Find by inspection the expansion of each of the following :

1. $(a + 3)^2$
2. $(2y + 3)^2$
3. $(4m - 7)^2$
4. 📖 $(3X + y)^2$
5. 📖 $(X - 3y)^2$
6. $(-\ell - m)^2$
7. $(-4a - 7)^2$
8. 📖 $(2X + 3y)^2$
9. $\left(4X^2 - \frac{1}{2}y^2\right)^2$

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Teacher's Guide	
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Board	
Data show	

Activity (3): (10 Min.)

Find by the direct product the result of each of the following :

1. $(a + 3)(a - 3)$
2. 📖 $(4m - 7)(4m + 7)$
3. 📖 $(6X - 2y)(6X + 2y)$
4. $(a^2 + 9)(a^2 - 9)$
5. $(3X^2 - 5y^2)(3X^2 + 5y^2)$
6. $(\ell m + 6n)(\ell m - 6n)$

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Teacher	
Library	
Teacher's Guide	

Associated Activity	
Meetings	
Website	
Research	
Reading	

Activity (4): (10 Min.)

Reduce : $(X - y)^2 + 2Xy$, then find the numerical value of the result when $X = -1$, $y = 2$

Reduce : $(2X - 2)^2 + (X - 2)(X + 2)$, then find the numerical value of the result when $X = -1$

Find the area of the coloured part in each of the following figures :

1. (2X + 3y) cm. , 2(X − y) cm , (X + y) cm.
2. (X + 2) cm. , (X − 1) cm , 2X cm. , (X + 5) cm.
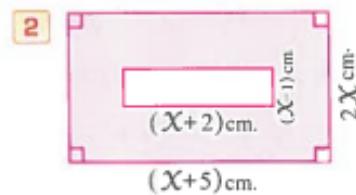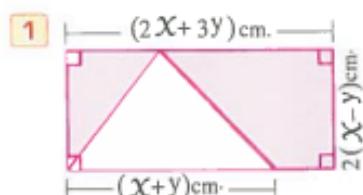
Evaluation

Choose the correct answer

1. The middle term in the expansion of $(3X - 1)^2$ is ··········
   (a) $3X$ (b) $-6X$ (c) $6X$ (d) $6X^2$

2. The middle term in the expansion of $(2a + 3b)^2$ is ··········
   (a) $12ab$ (b) $-12ab$ (c) $6ab$ (d) $-6ab$

3. If $X = -1$, then the numerical value of the expression $(X + 1)^2$ is ··········
   (a) zero (b) 1 (c) 2 (d) 3

4. If $X = \frac{4}{3}$, then $(X - 2)(X + 2) = $ ··········
   (a) $\frac{4}{3} - 2$ (b) $\left(\frac{4}{3}\right)^2 - 2$ (c) $\left(\frac{4}{3}\right)^2 - 4$ (d) $\left(\frac{4}{3}\right)^2 + 4$

5. If $X - y = 3$ and $X + y = 5$, then $X^2 - y^2 = $ ··········
   (a) 2 (b) -2 (c) 8 (d) 15

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Homework

School book page (   ) , Questions number (   )

Day	Date	Class	Period	Algebra – Unit 2
				Lesson 7 **Dividing an algebraic expression by a monomial**

Lesson Objectives: -

By the end of the lesson, students will be able to:

1) Divide an expression by a monomial.
2) Know the relation between dividing and multiplying.

Warm Up: (5 Min.)

Find the following products :

1 $(X + 3)(X^2 + X + 1)$

2 $(X + 1)(X^2 - X + 1)$

3 $(2y + 1)(y^2 + y + 5)$

4 $(2X + 3)(4X^2 - 6X + 7)$

Presentation: (5 Min.)

1 $\dfrac{21X^2 + 14X}{7X}$ | $\dfrac{21X^2 + 14X}{7X} = \dfrac{21X^2}{7X} + \dfrac{14X}{7X} = 3X + 2$

2 $(16X^3y + 8X^2y^3 - 12X^2y)$ by $(-4X^2y)$

2 $(16X^3y + 8X^2y^3 - 12X^2y) \div (-4X^2y)$

$$= \dfrac{16X^3y}{-4X^2y} + \dfrac{8X^2y^3}{-4X^2y} + \dfrac{-12X^2y}{-4X^2y} = -4X - 2y^2 + 3$$

Activity (1): (10 Min.)

*If the symbols in the following expressions are non-zero numbers, find the quotient in each case:

1 $5a - 10$ by 5

2 $12X + 15y$ by -3

3 $4a^2 + 6a$ by $2a$

4 $24X^3 - 18X^2$ by $-6X^2$

5 $12a^2b + 20ab^2$ by $4ab$

6 $16a^3b^2 - 24a^2b^2$ by $4a^2b$

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Activity (2): (10 Min.)

*If the symbols in the following expressions are non-zero numbers, find the quotient in each case:

1 $\dfrac{26\,x^2 + 14\,x^4}{2\,x}$

2 $\dfrac{18\,m^4 + 32\,m^2}{-2\,m^2}$

3 $\dfrac{48\,x^3 - 80\,x^2}{8\,x^2}$

4 $\dfrac{9\,\ell^3\,m^4 - 18\,\ell\,m^2}{3\,\ell\,m^2}$

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Activity (3): (10 Min.)

The area of a rectangle is $(24\,x^3 + 18\,x^2 + 42\,x)$ cm^2 and its width is $6\,x$ cm.

Find the length of the rectangle in terms of x

The area of a rectangle is $(8\,a^4\,b^3 + 12\,a^3\,b^4 - 8\,a^2\,b^2)$ cm.^{2} and its length is $(4\,a^2\,b^2)$ cm.

Find its width if $a = 1$ and $b = 2$

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Meetings	
Website	
Research	
Reading	

Activity (4): (10 Min.)

Divide : $(12\,y^3 - 8\,y^2)$ **by** $4\,y$, then find the absolute value of the result when $y = \dfrac{1}{2}$

Divide : $(12\,x^3\,y^2 - 4\,x^2\,y^3)$ **by** $4\,x^2\,y^2$,

then find the numerical value of the result when $x = 1$ and $y = -1$

Divide : $(16\,x^3 + 8\,x - 12\,x^2)$ **by** $4\,x$, then add the result to $3\,x - x^2 + 7$,

and find the numerical value of the result when $x = 1$

Evaluation

Choose the correct answer

1 $(x^2 + x) \div x = \cdots\cdots$ $(x \neq 0)$

(a) zero   (b) x (c) $2\,x + 1$ (d) $x + 1$

2 $(15\,a + 5) \div 5 = \cdots\cdots$

(a) $3\,a$ (b) $10\,a$ (c) $3\,a + 1$ (d) $4\,a$

3 $(4\,a^3 - 2\,a) \div (-2\,a) = \cdots\cdots$ $(a \neq 0)$

(a) $-2\,a^2$ (b) $-2\,a^2 + 1$ (c) $2\,a^2 + 1$ (d) -1

4 $(15\,x^4 + 5\,x^3) \div 5\,x^3 = \cdots\cdots$ $(x \neq 0)$

(a) $3\,x^2 + x$ (b) $5\,x^2 + 1$ (c) $3\,x + 1$ (d) $4\,x^4$

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Homework

School book page (   ) , Questions number (   )

Day	Date	Class	Period	Algebra – Unit 2
				Lesson 8
				Dividing an expression by another one

Lesson Objectives: -

By the end of the lesson, students will be able to:

1) Dividing an expression by another.
2) Find a missing term in the division.

Warm Up: (5 Min.)

Find the quotient in each case:

[c] $\dfrac{48x^3 - 80x^2}{8x^2}$

[f] $\dfrac{32x^5 - 48x^3 + 72x^7}{-8x^3}$

Presentation: (5 Min.)

Divide : $x^2 + x - 12$ by $x + 4$ where $x \neq -4$

– To operate the division , we do the following steps :

1 Divide x^2 by x , then the result is x

2 Multiply x by $(x + 4)$, then we get $x^2 + 4x$

3 Subtract $x^2 + 4x$ from $x^2 + x - 12$, then we get $-3x - 12$

4 Repeat the previous steps (in order) till the difference will

be equal to zero. Then the operation of division will be finished

and the quotient $= x - 3$

$$
\begin{array}{r|l}
x+4 & x^2 + x \ - 12 \\
x-3 & \ominus \quad \ominus \\
 & x^2 + 4x \\
\hline
 & -3x - 12 \\
 & \oplus \quad \oplus \\
 & -3x - 12 \\
\hline
 & 0 \qquad 0
\end{array}
$$

Activity (1): (10 Min.)

Find the quotient of each of the following:

1) $x^2 + 5x + 6$ by $x + 2$

2) $y^2 - 9y + 20$ by $y - 4$

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Brain storming	
Problem Solving	
Team Teaching	
Role-playing	
Work Groups	
Team Teaching	

Activity (2): (10 Min.)
Find the quotient of each of the following:

[1] $x^3 + 5x^2 + 7x + 2$ by $x + 2$

[2] $x^3 - x^2 - 9x - 12$ by $x - 4$

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Workbook	
Teacher's Guide	
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Board	
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Activity (3): (10 Min.)

1) If the area of a rectangle is $(15x^2 + 11x - 14)$ cm² and its width is $(3x - 2)$ cm. Calculate its length.

2) If the area of a rectangle is $(2x^2 + 7x - 15)$ cm² and its length is $(x + 5)$ cm. Find its width and calculate its perimeter when $x = 3$.

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Teacher's Guide	

Associated Activity	
Meetings	
Website	
Research	
Reading	

Activity (4): (10 Min.)

Find the sum of $3x^3 - 5x^2 + 7x + 1$ and $3x^3 - x + 7$,
then divide the result by $3x + 2$

Find the quotient of dividing $2x^3 - x^2 - 2x + 6$ by $2x + 3$,
then find the numerical value for the quotient when $x = 1$

Evaluation

Find the quotient of each of the following:

[1] $x^3 + 5x^2 + 7x + 2$ by $x + 2$ [2] $x^3 - x^2 - 9x - 12$ by $x - 4$

If $x + 3$ is one factor of $2x^2 + 3x - 9$, find the other factor.

📖 If the area of a rectangle is $(15x^2 + 11x - 14)$ cm² and its width is $(3x - 2)$ cm.
, calculate its length $(x > \frac{2}{3})$

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Homework

School book page (   ) , Questions number (   )

Day	Date	Class	Period	Algebra – Unit 2
				Lesson 9
				Factorization by identifying (H.C.F.)

Lesson Objectives: -

By the end of the lesson, students will be able to:

1) Factorize an expression by identifying the H.C.F.

Warm Up: (5 Min.)

Find the quotient of each of the following:

1) $x^2 + 5x + 6$ by $x + 2$

2) $y^2 - 9y + 20$ by $y - 4$

Presentation: (5 Min.)

To find the highest common factor (H.C.F.) for some algebraic terms :

1 Find the highest common factor of the numerical coefficients of these terms.

2 Take each repeated letter in all terms with the smallest index.

For example:

The H.C.F. of the algebraic terms : $6x^2y$, $-8xy^3$, $4xyz$ is $2xy$

Activity (1): (10 Min.)

Factorize each of the following by identifying the H.C.F.:

1 $5a + 5b$

2 $3x - 3y$

3 $5y - 10$

4 $8y^3 - 4x^2$

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Problem Solving	
Team Teaching	
Role-playing	
Work Groups	
Team Teaching	

Activity (2): (10 Min.)

Factorize each of the following by identifying the H.C.F.:

1 $5a - 5b + 5c$

2 $6a + 8b + 10c$

3 $x^3 + 2x^2 + 5x$

4 $8a^3 - 4a^2 + 6a$

5 $2x^2y + 6xy^2 - 2y$

6 📖 $9m^4n^2 - 6m^3n^3 + 12m^2n^4$

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Activity (3): (10 Min.)

Find the result by identifying the H.C.F.:

1) $48 \times 45 + 48 \times 55$

2) $7 \times 123 + 7 \times 35 - 7 \times 18$

3) $15 \times 17 + 15 \times 13 - 15 \times 30$

4) $5 \times (48)^2 + 7 \times 48 + 53 \times 48$

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Associated Activity	
Meetings	
Website	
Research	
Reading	

Activity (4): (10 Min.)

(A) Complete each of the following

1 📖 $6a^2 + 12ab = 3a(\cdots\cdots + \cdots\cdots)$

2 📖 $a^2b + b^2a = \cdots\cdots (a + b)$

3 $12x^2y - 16xy^2 = \cdots\cdots (3x - \cdots\cdots)$

4 $x(a + b) + y(a + b) = (\cdots\cdots + \cdots\cdots)(a + b)$

5 $3(a - b) - 4(b - a) = \cdots\cdots (a - b)$

Evaluation

Choose the correct answer

1 $3x - 9x^2 = \cdots\cdots$

(a) $12x$　　(b) $-6x$　　(c) $-6x^2$　　(d) $3x(1 - 3x)$

2 📖 $7x^2 + 14y^2 = 7(\cdots\cdots)$

(a) $x^2 + y^2$　　(b) $x^2 + 2y^2$　　(c) $7x^2 + y^2$　　(d) $x + 2y$

3 📖 $4x^2y^2 - 2xy^2 + 4x^2y = \cdots\cdots (2xy - y + 2x)$

(a) $4xy$　　(b) $2xy$　　(c) $2x$　　(d) $2y$

4 📖 The factorization of $6x^2y - 4x$ by identifying the H.C.F. is $\cdots\cdots$

(a) $3xy(x + y)$　　(b) $2xy(3y - 2)$　　(c) $2xy(3x - 2)$　　(d) $2x(3xy$

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Homework

School book page (　　　), Questions number (　　　)

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Day	Date	Class	Period	Algebra – Unit 3
				Lesson 1 – (The arithmetic mean)

Lesson Objectives: -

By the end of the lesson, students will be able to:

1) Find the arithmetic mean for set of values

Warm Up: (5 Min.)

Factorize by identifying the H.C.F.:

[a] $3x^2 + 6x$ [d] $35a + 10a^2$

[b] $8y^2 - 4x^2$ [e] $49b^2 - 7b^3$

[c] $5y - 10$ [f] $3x^2 + 12x - 6$

Presentation: (5 Min.)

$$\text{The arithmetic mean of a set of values} = \frac{\text{Sum of these values}}{\text{Number of these values}}$$

Activity (1) (10 min) - Find the arithmetic mean for set of values:

1　4 , 6   2　3 , 5

3　3 , 4   4　2 , 4 , 6

Activity (2): (10 Min.) Complete each of the following

1 　The arithmetic mean of the values 18 , 35 , 24 , 6 is ....

2 　The arithmetic mean of the values $2 - a$, 4 , 1 , 5 , $3 + a$ is ....

Evaluation (10 Min.)

Choose the correct answer

1 The arithmetic mean of the values x , $x - y$, $y - x$ is ....

(a) xy (b) $\frac{y}{2}$ (c) $\frac{x}{2}$ (d) $\frac{x}{3}$

2 If the arithmetic mean of the numbers 9 , 4 , 5 , x is 5 , then $x =$ ....

(a) 2   (b) 3   (c) 4   (d) 5

3 If the arithmetic mean of the values 3 , 4 , 8 , a , $a + 2$ is 15 , then $a =$ ....

(a) 29   (b) 58   (c) 75   (d) 17

Homework

Mr. Mohamed Abdelhamid

School book page (   )

Questions number (   )

Day	Date	Class	Period	Algebra – Unit 3
				Lesson 2 – (The median)

Lesson Objectives: -

By the end of the lesson, students will be able to:

2) Find the median for set of values

Presentation: (10 Min.)

To get the median, do as follows :

Arrange the values ascendingly or descendingly

then

If the number of values is odd, then :
The median is the value which is in the middle exactly.

If the number of values is even, then :
The median $= \dfrac{\text{The sum of the two middle values}}{2}$

Activity (1) (10 min)

Find the median of each set of the following :

1 $-2 , 0 , -1 , 1 , 5$

2 $10 , -2 , -2 , 8 , -12 , 18$

3 $\dfrac{1}{2} , \dfrac{1}{4} , 1$

4 $\dfrac{5}{6} , \dfrac{3}{10} , \dfrac{7}{15} , \dfrac{2}{5}$

Activity (2) (10 min)

1 The median of the values 4 , 8 , 3 is ....
   (a) 3   (b) 4   (c) 5   (d) 8

2 The median of the values 6 , 5 , 9 , 8 is ....
   (a) 5   (b) 6   (c) 7   (d) $7\dfrac{1}{2}$

3 The median of the values 4 , 8 , 3 , 5 , 7 is ....
   (a) 3   (b) 4   (c) 5   (d) 7

Evaluation (10 Min.)

(1) The median of: 25, 32, 28, 40, 50, 58, 50 is ....
   (a) 40   (b) 45   (c) 50   (d) 58

(2) The median of: 2, 5, 5, 6, 7, 9, 11, 14, 16, 21 is ....
   (a) 7   (b) 8   (c) 9   (d) 16

(3) The order of the median of: 6, 2, 5, 4, 1 is ....
   (a) 1st   (b) 2nd   (c) 3rd   (d) 4th

(4) If the order of the median of a number of ordered values is the third, then the number of these values is ....
   (a) 3   (b) 4   (c) 5   (d) 6

Homework

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School book page (   )

Questions number (   )

Day	Date	Class	Period	Algebra – Unit 3
				Lesson 3 – (The mode)

Lesson Objectives: -

By the end of the lesson, students will be able to:

1) Find the mode for set of values

Presentation: (10 Min.)

The mode of a set of data is the most common data.

Remarks

• If all of the data are different , then these data have not a mode.

1 *Complete :*

The mode of the values 6 , 8 , 8 , 5 , 6 , 8 is ⋯⋯⋯

Activity (1) (10 min)

1 The mode of a set of data is ⋯⋯⋯

2 The mode of the values 2 , 3 , 8 , 2 , 9 is ⋯⋯⋯

3 📖 The mode of the values 14 , 11 , 12 , 11 , 14 , 15 , 11 is ⋯⋯⋯

4 The mode of the values 8 , 11 , 5 , 8 , 4 , 5 , 4 , 11 , 4 is ⋯⋯⋯

Activity (2) (10 min)

The following frequency table represents the marks of 40 pupils in an examination

The mark	15	16	17	18	19	20
Number of pupils (frequence)	4	5	8	12	7	4

Find the mode mark.

Evaluation (10 Min.)

Complete each of the following

(1)   The mode of the values 3, 6, 10, 13, 19, 19, 21 is ⋯⋯⋯⋯

(2)   The mode of the values 5, 33, 5, 33, 3, 5 is ⋯⋯⋯⋯⋯⋯⋯

(3)   The mode of the values 8, 11, 5, 8, 4, 5, 4, 11, 4 is ⋯⋯⋯⋯⋯

(4)   If the mode of the values 4, a, 5, 3, is 3 then a = ⋯⋯⋯⋯

Homework
Mr. Mohamed
School book page (   )
Questions number (   )

Second

Geometry

Mr. Mohamed

Abdelhamid

Day	Date	Class	Period	Geometry – Unit 4
				Lesson 1
				Geometric Concepts

Lesson Objectives: -

By the end of the lesson, students will be able to:

1) Know the concept of line segment, ray, straight line and angle.
2) Determine the relations between line segment, ray and straight lines.
3) Determine the types of angles.

Presentation: (15 Min.)

[1] The line segment:

It is the set of points between two distinct points and denoted by $\overline{AB}$ or $\overline{BA}$

$AB = 6\ cm$, $C \in \overline{AB}$, $D \notin \overline{AB}$

[2] The ray:

It is a line segment extended from only one of its terminals infintly and denoted by $\overrightarrow{AB}$

$C \in \overrightarrow{AB}$, $D \in \overrightarrow{AB}$, $E \notin \overrightarrow{AB}$, $\overline{AB} \subset \overrightarrow{AB}$, $\overrightarrow{AB} \neq \overrightarrow{BA}$

[3] The straight line:

It is a line segment extended from its two terminals infinitely and denoted by $\overleftrightarrow{AB}$ or $\overleftrightarrow{BA}$

$C \in \overleftrightarrow{AB}$, $D \in \overleftrightarrow{AB}$, $E \in \overleftrightarrow{AB}$, $\overline{AB} \subset \overrightarrow{AB} \subset \overleftrightarrow{AB}$

1 Zero angle	**2 Acute angle**	**3 Right angle**
Its measure = 0° Its sides are coincident.	Its measure is more than 0° and less than 90°	Its measure = 90°
4 Obtuse angle	**5 Straight angle**	**6 Reflex angle**
Its measure is more than 90° and less than 180°	Its measure = 180° Its sides are forming one straight line.	Its measure is more than 180° and less than 360°
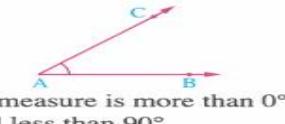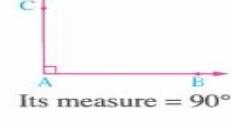
Activity (1): (10 Min.)

In the opposite figure :

A , B , C and D are points lying on one line ,

$\overrightarrow{AD} \cap \overrightarrow{BE} = \{B\}$
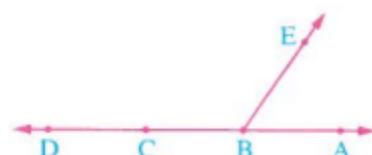
Complete each of the following by using
$\in , \notin , \subset$ or $\not\subset$:

1 A .... $\overleftrightarrow{DC}$

2 D .... $\overline{AC}$

3 C .... $\overrightarrow{AB}$

4 A .... $\angle EBC$

5 $\overline{DC}$ .... $\overleftrightarrow{AB}$

6 $\overline{BC}$ .... $\overrightarrow{BA}$

7 $\overrightarrow{BA}$ .... $\overleftrightarrow{DC}$

8 $\overline{AC}$ .... $\overrightarrow{AD}$

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Teaching Strategies	
Brain storming	
Problem Solving	
Team Teaching	
Role-playing	
Work Groups	
Team Teaching	

Activity (2): (10 Min.)

Mention the type of the angle whose measure is as follows:

(1) $57°$ ....

(2) $117°$ ....

(3) $90°$ ....

(4) $200°$ ....

(5) $180°$ ....

(6) $43\frac{1}{2}°$ ....

Teaching Aids	
Student's book	
Workbook	
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Library	
Board	
Data show	

Activity (3): (10 Min.)

Complete each of the following

1 The angle is ....

2 The measure of the straight angle = ... ° and the measure of zero angle = ... °

3 The measure of the right angle = ... °

4 The acute angle is the angle whose measure is less than .... and more than ....

Teaching sources	
School book	
Teacher	
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Teacher's Guide	

Associated Activity	
Meetings	
Website	
Research	
Reading	

Activity (4): (10 Min.)

In the opposite figure :

$F \in \overleftrightarrow{AB}$, $\overrightarrow{FD} \perp \overleftrightarrow{AB}$ and m ($\angle$ CFE) = 90°
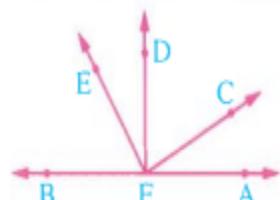
Complete the following :

1 $\overrightarrow{FA} \cup \overrightarrow{FC}$ = ...

2 $\overrightarrow{FC} \cup \overrightarrow{FB}$ = ...

Evaluation

Mention the type of the angle whose measure is as follows:

(1) $97°$ ....

(2) $198°$ ....

(3) $90°$ ....

(4) $180°$ ....

Complete each of the following

m ($\angle$ ABC)	45°	180°	200°	150°	90°	94° 10̀	89° 6ì
Its type	....	....	....	....	....	....	....

Mr. Mohamed

Homework

School book page (   ) , Questions number (   )

Abdelhamid

Lesson Objectives: -

By the end of the lesson, students will be able to:

1) Obtain the complement and the supplement of any angle.
2) Identify the adjacent angle.
3) Determine if the points are on the same straight line or not.

Presentation: (15 Min.)

If $m (\angle ABC) = 130°$

, then $m (\text{reflex} \angle ABC) = 360° - 130° = 230°$
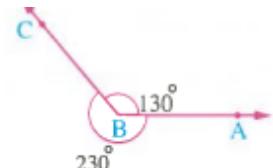
Adjacent angles

Two angles are said to be adjacent if they have a common vertex and a common side and the other two sides are on opposite sides of this common side.

Complementary angles

Two angles are said to be complementary if their sum is 90°.

And the two outer sides are perpendicular

Supplementary angles

Two angles are said to be supplementary if their sum is 180°.
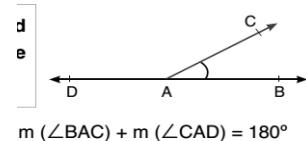
$m (\angle BAC) + m (\angle CAD) = 180°$

Remarks

If two adjacent angles are supplementary , then their outer sides are on the same straight line.

If the two adjacent angles are complementary angles , then their outer sides are perpendicular.

Activity (1): (10 Min.)

Write the measure of the angle which supplements each of the angles whose measures are as follow:

(1) 20° .... (2) 90° .... (3) 152° .... (4) 0° ....

Write the measure of the angle which complements each of the angles whose measures are as follow :

(1) 30° .... (2) 60° .... (3) 48° .... (4) 0° ....

Activity (2): (10 Min.)

In each of the following figures, if $\overrightarrow{BA} \perp \overrightarrow{BC}$, find the measure of the required angle under each figure :
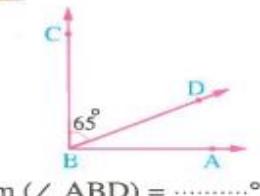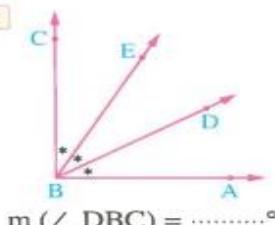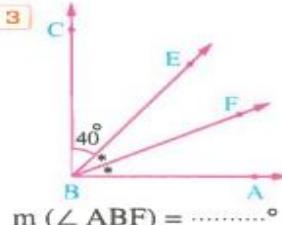
m (∠ ABD) = ...°

m (∠ DBC) = ...°

m (∠ ABF) = ...°

Activity (3): (10 Min.)

In each of the following figures, if $C \in \overleftrightarrow{AB}$, find the measure of the required angle under each figure :
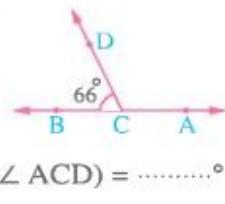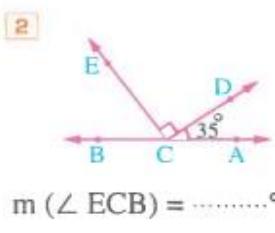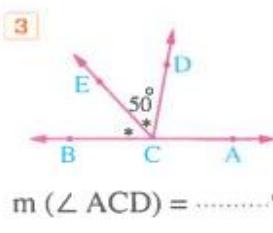
m (∠ ACD) = ...°

m (∠ ECB) = ...°

m (∠ ACD) = ...°

Activity (4): (10 Min.)

Complete each of the following

1 If ∠ X complements ∠ Y , ∠ Z complements ∠ Y , then ∠ Z and ∠ X are ....

2 If ∠ X complements ∠ Y , m (∠ X) = m (∠ Y) , then m (∠ X) = ...°

3 If ∠ A and ∠ B are two supplementary angles and m (∠ A) = m (∠ B) , then m (∠ A) = ... °

4 If m (∠ X) = $\frac{1}{2}$ m (∠ Y) , m (∠ X) = 30° , then the two angles X and Y are ....

5 If the ratio between the measures of two supplementary angles is 2 : 7 , then the measure of the greater angle equals .... °

6 If m (∠ A) = $\frac{1}{2}$ m (∠ B) , m (∠ C) = $\frac{1}{2}$ m (∠ D) , ∠ B supplements ∠ D , then m (∠ A) + m (∠ C) = ... °

Evaluation

Choose the correct answer

1 Between any two distinct points we can draw .... straight line passing through them.

(a) zero   (b) 1   (c) 2   (d) 3

2 If m (∠ A) + m (∠ B) = 180° , then ∠ A and ∠ B are two .... angles.

(a) equal in measure   (b) complementary

(c) supplementary   (d) adjacent

3 If $\overrightarrow{BA} \perp \overrightarrow{BC}$, then m (∠ ABC) = ...

(a) 40°   (b) 90°   (c) 180°   (d) 360°

4 If ∠ A supplements ∠ B , ∠ A supplements ∠ C, then ∠ B and ∠ C are ....

(a) equal in measure.   (b) complementary.

(c) supplementary.   (d) adjacent.

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Homework

School book page (   ) , Questions number (   )

Day	Date	Class	Period	Geometry – Unit 4
				Lesson 2 – Part 1 **Some Relations Between Angles(follow)**

Lesson Objectives: -

By the end of the lesson, students will be able to:

1) Obtain the vertically opposite angle.
2) Determine measure of a missed angle from the accumulative angles.

Presentation: (15 Min.)

Vertically opposite angles

If two straight lines intersect , then the measures of each two vertically opposite angles are equal.

For example :

In the opposite figure :

If $\overrightarrow{AB} \cap \overrightarrow{CD} = \{M\}$

, $m(\angle AMC) = 50°$
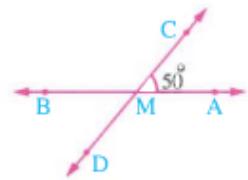
, then $m(\angle DMB) = m(\angle AMC) = 50°$ (vertically opposite angles)

Accumulative angles

The sum of measures of the accumulative angles at a point is 360°

In the opposite figure :

If $\overrightarrow{MA}$, $\overrightarrow{MB}$, $\overrightarrow{MC}$ and $\overrightarrow{MD}$ are rays having

the same starting point M

, then $m(\angle AMB) + m(\angle BMC) + m(\angle CMD) + m(\angle DMA) = 360°$

So , $m(\angle DMA) = 360° - (90° + 40° + 70°) = 160°$
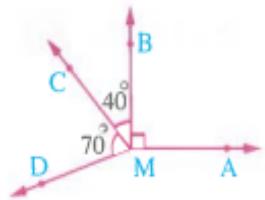
Activity (1): (10 Min.)

Find the measure of the required angle

1.
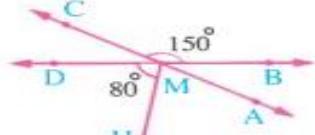
$m(\angle AMH) = \ldots\ldots°$

2.
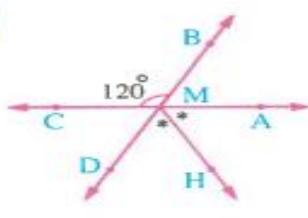
$m(\angle HMD) = \ldots\ldots°$

3.

$m(\angle COB) = \ldots\ldots°$

Teaching Strategies	
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Problem Solving	
Team Teaching	
Role-playing	
Work Groups	
Team Teaching	

Activity (2): (10 Min.)

Complete each of the following

1 If two straight lines intersect , then each two vertically opposite angles are ....

2 The sum of the measures of the accumulative angles at a point equals ....°

3 In the opposite figure :

If $\overleftrightarrow{AB} \cap \overleftrightarrow{CD} = \{M\}$, then $x = $ ....°
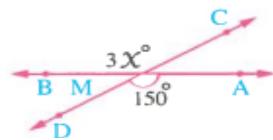
Teaching Aids	
Student's book	
Workbook	
Teacher's Guide	
Library	
Board	
Data show	

Activity (3): (10 Min.)

📖 In the opposite figure :

If $B \in \overleftrightarrow{AC}$, $m (\angle DBC) = 135°$

and $\overrightarrow{BA}$ bisects $\angle DBE$

, find each of :

$m (\angle ABD)$, $m (\angle DBE)$, $m (\angle CBE)$
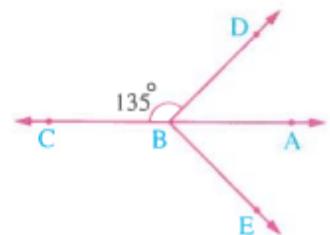
Teaching sources	
School book	
Teacher	
Library	
Teacher's Guide	

Associated Activity	
Meetings	
Website	
Research	
Reading	

Activity (4): (10 Min.)

In the opposite figure :

$\overrightarrow{OC} \perp \overrightarrow{OH}$

Are $\overrightarrow{OA}$ and $\overrightarrow{OD}$ on the same straight line or not ? Why ?

, then find : $m (\angle BOC)$
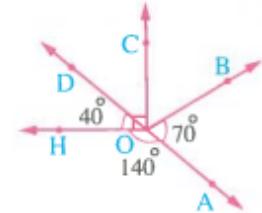
In the opposite figure :

$\overleftrightarrow{AB} \cap \overleftrightarrow{CD} = \{M\}$, $m (\angle CMX) = 90°$,

$m (\angle XMB) = 35°$ and $m (\angle AMY) = 80°$

Find :

1 $m (\angle AMD)$ 2 $m (\angle DMY)$
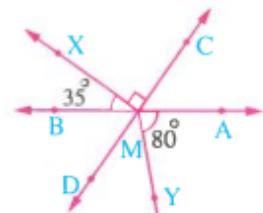
Evaluation

Choose the correct answer

1 The sum of measures of the accumulative angles at a point equals the sum of measures

of .... angles.

(a) 2 right   (b) 3 right   (c) 4 right   (d) 5 right

2 The sum of measures of 4 accumulative angles at a point .... the sum of measures

of 5 accumulative angles at a point.

(a) =   (b) <   (c) >   (d) ≠

3 The two bisectors of two adjacent supplementary angles ....

(a) are perpendicular.   (b) are parallel.

(c) are coincident.   (d) included an acute angle between them.

Homework

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School book page (   ) , Questions number (   )

Day	Date	Class	Period	Geometry – Unit 4
				Lesson 2 – Part 2 **Some Relations Between Angles(follow)**

Lesson Objectives: -

By the end of the lesson, students will be able to:

a) Know the angle bisector.

b) Solve problems about relations between angles.

Presentation: (15 Min.)

It is the ray that divides the angle into two halves (two equal angles in measure)

In the opposite figure :

$\overrightarrow{MB}$ bisects ∠ AMC

i.e. $m(\angle AMB) = m(\angle BMC) = \frac{1}{2} m(\angle AMC)$

or $m(\angle AMC) = 2\, m(\angle AMB) = 2\, m(\angle BMC)$
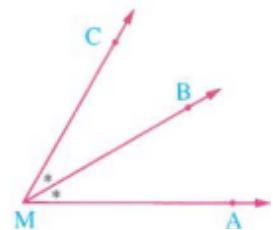
Activity (1): (10 Min.)

If $\overrightarrow{MC}$ bisects ∠ AMD , find the measure of the required angle under each figure :

[1] [2] [3]
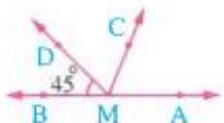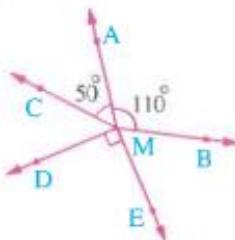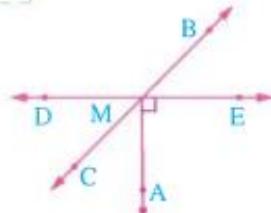
If $M \in \overleftrightarrow{AB}$, then

$m(\angle DMC) =$ ·········°

$m(\angle EMB) =$ ·········°

$m(\angle BME) =$ ·········°

Activity (2): (10 Min.)

📖 In the opposite figure :

If $\overleftrightarrow{AB} \cap \overleftrightarrow{CE} = \{M\}$, $\overrightarrow{MD} \perp \overleftrightarrow{CE}$ and $\overrightarrow{MB}$ bisects ∠ DME

, find the measures of the following angles :

∠ BME , ∠ DME , ∠ AMC and ∠ AME

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Teaching Strategies	
Brain storming	
Problem Solving	
Team Teaching	
Role-playing	
Work Groups	
Team Teaching	

Teaching Aids	
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Workbook	
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Activity (3): (10 Min.)

Complete each of the following

4 In the opposite figure :

If $\overrightarrow{MB} \perp \overrightarrow{MA}$

and $\overrightarrow{MC}$ bisects the reflexed angle AMB

, then m ($\angle$ AMC) = ...°
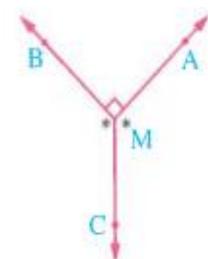
5 If $\overrightarrow{BD}$ bisects $\angle$ ABC and m ($\angle$ ABD) = 35° , then m ($\angle$ ABC) = ...°

6 In the opposite figure :

X = ...°
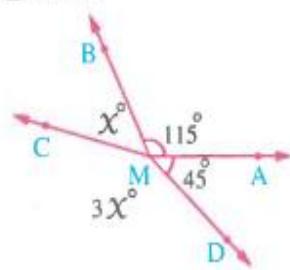
Teaching sources	
School book	
Teacher	
Library	
Teacher's Guide	

Associated Activity	
Meetings	
Website	
Research	
Reading	

Activity (5): (10 Min.)
Choose the correct answer

4 In the opposite figure :

If ABC is a triangle in which $\overrightarrow{CD}$

bisects $\angle$ ACB , m ($\angle$ A) = 58°,

m ($\angle$ B) = 60°

, then m ($\angle$ ADC) = ...

(a) 62°   (b) 89°   (c) 91°   (d) 130°
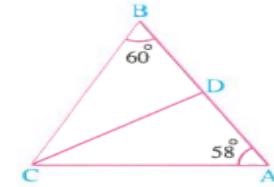
5 In the opposite figure :

If $\overrightarrow{CD}$ bisects $\angle$ BCA , m ($\angle$ A) = m ($\angle$ ADC) = 70°

, then m ($\angle$ B) = ...

(a) 70°   (b) 30°   (c) 80°   (d) 40°
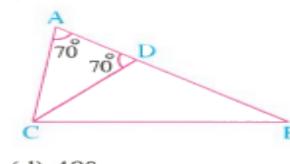
Evaluation

In the opposite figure :

m ($\angle$ BOC) = 80° , m ($\angle$ COD) = 110° ,

m ($\angle$ DOH) = 90°

and m ($\angle$ AOB) : m ($\angle$ AOH) = 2 : 3

Find : m ($\angle$ AOB) and m ($\angle$ AOH)
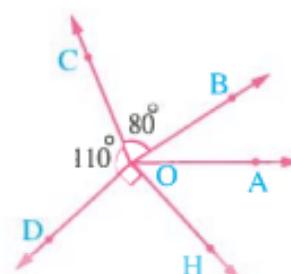
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Homework

School book page (   ) , Questions number (   )

Day	Date	Class	Period	Geometry – Unit 4
				Lesson 3 **Congruence**

Lesson Objectives: -

By the end of the lesson, students will be able to:

1) Know the concept of congruency of 2 angles and two line segments.
2) Deduce the conditions of congruency of two polygons.
3) Join between the previous lessons and the current lesson.

Presentation: (15 Min.)

(1) Two line segments are congruent if they are equal in length.
   if $AB = XY$ then $\overline{AB} \equiv \overline{XY}$.

(2) Two angles are congruent if they are equal in measure.
   if $m(\angle A) = m(\angle B)$ then $\angle A \equiv \angle B$.

(3) Two polygons are congruent if each side and each angle in one of them are congruent to their corresponding elements in the other.

(4) Two squares are congruent of the side length of one of them is congruent to the side length of the other.

(5) Two rectangles are congruent if the dimensions of one of them are congruent to the dimensions of the other.

For example :

The two opposite polygons are congruent because :

each two corresponding sides are equal in length.

i.e. AB = XY , BC = YZ , CD = ZM ,
   DE = ML and EA = LX

and each two corresponding angles are equal in measure.

i.e. m (∠ A) = m (∠ X) , m (∠ B) = m (∠ Y) , m (∠ C) = m (∠ Z) ,
   m (∠ D) = m (∠ M) and m (∠ E) = m (∠ L)

and we write the polygon ABCDE ≡ the polygon XYZML
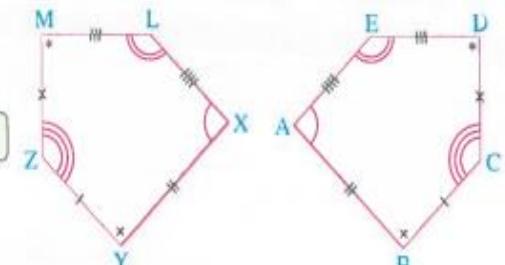
Activity (1): (10 Min.)

📖 **In the opposite figure :**

The two pentagons shown are congruent.

Complete :

1️⃣ B corresponds to ....

2️⃣ The polygon BLACK is congruent to the polygon ....

3️⃣ KB = ... cm.

4️⃣ m (∠ E) = m (∠ ....)

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Activity (2): (10 Min.)

Complete each of the following

In the opposite figure :

If $C \in \overleftrightarrow{BD}$, m $(\angle AFC) = 110°$, BC = 5 cm.

and the polygon ABCF ≡ the polygon EDCF

, complete the following :

1 AB = ...

2 AF = ...

3 m $(\angle E)$ = m $(\angle$ ....$)$

4 m $(\angle B)$ = m $(\angle$ ....$)$

5 m $(\angle FCD)$ = m $(\angle$ ....$)$

6 m $(\angle EFC)$ = ... °

7 BD = ... cm.

8 m $(\angle FCD)$ = ... °
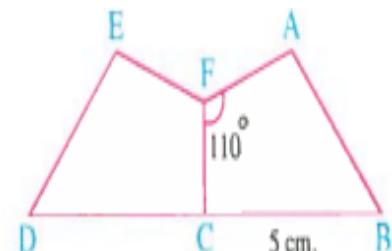
9 m $(\angle AFE)$ = ... °

Activity (5): (10 Min.)

Complete each of the following

1 Two line segments are congruent if ....

2 Two angles are congruent if ....

3 Two polygons are congruent if there is a correspondence between their vertices such that each .... and each .... in the first polygon is congruent to its corresponding element in ....

4 The axis of symmetry of a polygon divides it into two .... polygons.

5 If $\overline{AB} \equiv \overline{CD}$, then AB = ...

6 If $\overline{AB} \equiv \overline{XY}$, then AB − XY = ...

Evaluation

Complete each of the following

7 If $\angle A \equiv \angle B$ and m $(\angle A) = 50°$, then m $(\angle B)$ = ... °

8 If $\angle A$ supplements $\angle B$ and $\angle A \equiv \angle B$, then m $(\angle B)$ = ... °

9 If $\angle A$ complements $\angle B$ and $\angle A \equiv \angle B$, then m $(\angle A)$ = ... °

10 If C is the midpoint of $\overline{AB}$, then $\overline{AC}$ .... $\overline{BC}$

11 If the polygon ABCD ≡ the polygon XYZL , then $\overline{DA} \equiv$ ....

, m $(\angle BCD)$ = m $(\angle$ ....$)$

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Homework

School book page ( ) , Questions number ( )

Teaching Strategies	
Brain storming	
Problem Solving	
Team Teaching	
Role-playing	
Work Groups	
Team Teaching	

Teaching Aids	
Student's book	
Workbook	
Teacher's Guide	
Library	
Board	
Data show	

Teaching sources	
School book	
Teacher	
Library	
Teacher's Guide	

Associated Activity	
Meetings	
Website	
Research	
Reading	

Lesson Objectives: -

By the end of the lesson, students will be able to:

1) **Know the six elements of triangles.**

2) **Deduce the congruent elements of triangles.**

Presentation: (15 Min.)

We know that any triangle has three sides and three angles , these three sides and three angles are known as the six elements of the triangle.

The six elements of the triangle ABC are

three sides : $\overline{AB}$, $\overline{BC}$ and $\overline{AC}$

and three angles :

$\angle A$, $\angle B$ and $\angle C$
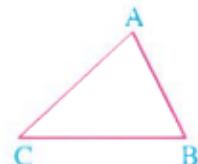
> The two triangles are congruent if each element of the 6 elements of one of them is congruent to the corresponding element in the other triangle.

For example :

If ABC and XYZ are two triangles in which :

1 $AB = XY$, $AC = XZ$

and $BC = YZ$

2 $m (\angle A) = m (\angle X)$, $m (\angle B) = m (\angle Y)$

and $m (\angle C) = m (\angle Z)$

, then $\triangle ABC \equiv \triangle XYZ$
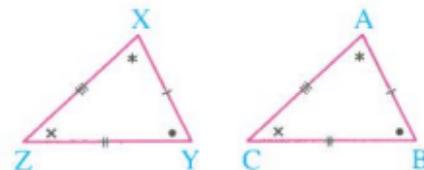
Activity (1): (10 Min.)

In the opposite figure :

These triangles are congruent

Complete : $X = \cdots\cdots^\circ$

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Teaching Strategies	
Brain storming	
Problem Solving	
Team Teaching	
Role-playing	
Work Groups	
Team Teaching	

Teaching Aids	
Student's book	
Workbook	
Teacher's Guide	
Library	
Board	
Data show	

Activity (2): (10 Min.)

Complete each of the following

If : $\triangle ABC \equiv \triangle XYZ$, $m (\angle A) = 50°$ and $m (\angle B) = 60°$, then : $m (\angle Z) = \cdots\cdots°$

If : $\triangle ABC \equiv \triangle LMN$, $m (\angle L) = 40°$ and $m (\angle B) = 90°$, then : $m (\angle C) = \cdots\cdots°$

If : $\triangle ABC \equiv \triangle XYZ$ and $m (\angle A) + m (\angle B) = 120°$, then : $m (\angle Z) = \cdots\cdots°$

If : $\triangle ABC \equiv \triangle DEF$ and $m (\angle C) = 90°$, then : $m (\angle D) + m (\angle E) = \cdots\cdots°$

Teaching sources	
School book	
Teacher	
Library	
Teacher's Guide	

Associated Activity	
Meetings	
Website	
Research	
Reading	

Activity (5): (10 Min.)

Complete each of the following

5 The diagonal of the rectangle divides its surface into two .... triangles.

6 If $\triangle ABC \equiv \triangle XYZ$, then AB = $\cdots\cdots$ and $m (\angle Z) = m (\angle \cdots\cdots)$

7 If AB = LM , BC = MN and $m (\angle B) = m (\angle M)$, then the two triangles .... and .... are congruent.

Evaluation

Complete each of the following

If : $\triangle ABC \equiv \triangle XYZ$, $m (\angle A) = 50°$ and $m (\angle B) = 60°$, then : $m (\angle Z) = \cdots\cdots°$

If : $\triangle ABC \equiv \triangle DEF$ and $m (\angle C) = 90°$, then : $m (\angle D) + m (\angle E) = \cdots\cdots°$

If : $\triangle ABC \equiv \triangle XYZ$ and $m (\angle A) + m (\angle B) = 120°$, then : $m (\angle Z) = \cdots\cdots°$

Homework

School book page (   ) , Questions number (   )

Mr. Mohamed
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Teaching Strategies	
Brain storming	
Problem Solving	
Team Teaching	
Role-playing	
Work Groups	
Team Teaching	

Teaching Aids	
Student's book	
Workbook	
Teacher's Guide	
Library	
Board	
Data show	

Teaching sources	
School book	
Teacher	
Library	
Teacher's Guide	

Associated Activity	
Meetings	
Website	
Research	
Reading	

Lesson Objectives: -

By the end of the lesson, students will be able to:

1) Deduce the conditions of congruency of two triangles.
2) Recognize the two congruent triangles.

Presentation: (15 Min.)

The cases of congruence of two triangles

Case (1)	Case (2)	Case (3)	Case (4)
Two sides and the included angle	Two angles and one side	Three sides	Hypotenuse and one side in the right-angled triangle
S. A. S.	A. S. A.	S. S. S.	R. H. S.
Two triangles are congruent if two sides and the included angle of one triangle are congruent to the corresponding parts of the other triangle	Two triangles are congruent if two angles and the side drawn between their vertices of one triangle are congruent to the corresponding parts of the other triangle	Two triangles are congruent if each side of one triangle is congruent to the corresponding side of the other triangle	Two right-angled triangles are congruent if the hypotenuse and a side of one triangle are congruent to the corresponding parts of the other triangle

For example :

If ABC and DEF are two triangles in which :

$$\begin{cases} \overline{AC} \equiv \overline{DF} \\ \overline{BC} \equiv \overline{EF} \\ m\,(\angle\,B) = m\,(\angle\,E) = 90° \end{cases}$$

, then $\triangle\,ABC \equiv \triangle\,DEF$ and we deduce that :

$\overline{AB} \equiv \overline{DE} \qquad \angle\,A \equiv \angle\,D \qquad \angle\,C \equiv \angle\,F$
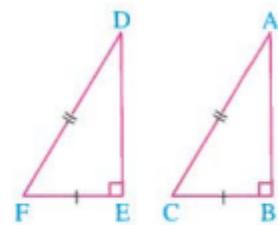
Activity (1): (10 Min.)

Complete each of the following

1. Any two triangles are congruent if two sides and ....
2. Any two triangles are congruent if two angles and .... in one of the triangles are congruent to their corresponding elements in the other.
3. Any two triangles are congruent if each .... is congruent to its corresponding .... in the other triangle.
4. Any two right-angled triangles are congruent if ....

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Activity (2): (10 Min.)

In the opposite figure :

If $AB = AD$, $BC = 7$ cm. , $m(\angle BAC) = m(\angle DAC) = 25°$

and $m(\angle B) = 30°$

, complete the following :

1 $\triangle ACB \equiv \triangle$ ....

2 $m(\angle D) = $ ....$°$

3 $CD = $ .... cm.

4 $m(\angle ACD) = $ ....$°$
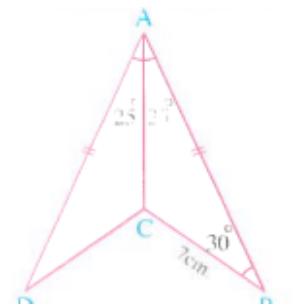
Activity (5): (10 Min.)

In the opposite figure :

If $\overline{CD} \cap \overline{BA} = \{F\}$, $FA = FB$, $CF = FD$,

$m(\angle CFB) = 35°$ and $m(\angle B) = 100°$,

then complete : $m(\angle D) = $ ....$°$
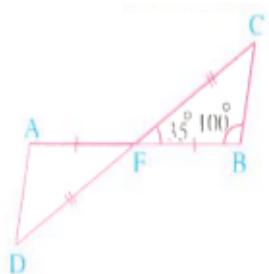
Activity (5): (10 Min.)

In the opposite figure :

C is the midpoint of $\overline{BD}$, $AC \perp BD$,

$AB = 5$ cm. and $m(\angle B) = 57°$

Find : 1 The length of $\overline{AD}$

2 $m(\angle DAC)$
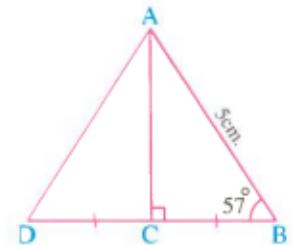
In the opposite figure :

$BD = CE$, $m(\angle ABC) = m(\angle ACB)$

and $m(\angle BAD) = m(\angle CAE)$

Is $AD = AE$? Why ?
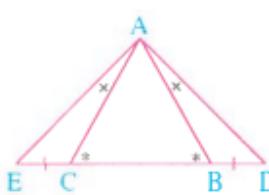
Evaluation

Complete each of the following

1 If $\triangle ABC \equiv \triangle XYZ$, $m(\angle A) = 50°$ and $m(\angle B) = 60°$, then $m(\angle Z) = $ ....$°$

2 If $\triangle ABC \equiv \triangle LMN$, $m(\angle L) = 40°$ and $m(\angle B) = 90°$, then $m(\angle C) = $ ....$°$

3 If $\triangle ABC \equiv \triangle XYZ$ and $m(\angle A) + m(\angle B) = 120°$, then $m(\angle Z) = $ ....$°$

4 If $\triangle ABC \equiv \triangle DEF$ and $m(\angle C) = 90°$, then $m(\angle D) + m(\angle E) = $ ....$°$

5 If $\triangle ABC \equiv \triangle XYZ$, the perimeter of $\triangle ABC = 12$ cm. , $XY = 4$ cm. and $YZ = 5$ cm. ,

then $AC = $ ....

Homework

School book page (   ) , Questions number (   )

Mr. Mohamed Abdelhamid

Day	Date	Class	Period	Geometry – Unit 4
				Lesson 5 – Part 1
				Parallelism

Lesson Objectives: -

By the end of the lesson, students will be able to:

1) Determine the pairs of angles produced out of parallelism.
2) Know the relation between the angles of parallelism.
3) Find out the measure of angles of parallelism.

Presentation: (15 Min.)

If a straight line intersects two parallel straight lines, then each two alternate angles are equal in measure.

If a straight line intersects two parallel straight lines, then each two corresponding angles are equal in measure.

If a straight line intersects two parallel straight lines, then each two interior angles in the same side of the transversal are supplementary.

For example :

If $\overleftrightarrow{AB}$ // $\overleftrightarrow{CD}$ and $\overleftrightarrow{EF}$ is a transversal to them
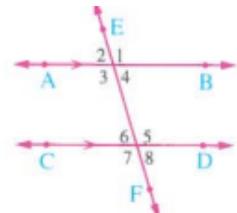
1 $m(\angle 3) = m(\angle 5)$, $m(\angle 4) = m(\angle 6)$

2 $m(\angle 1) = m(\angle 5)$, $m(\angle 2) = m(\angle 6)$, $m(\angle 3) = m(\angle 7)$, $m(\angle 4) = m(\angle 8)$

3 $m(\angle 3) + m(\angle 6) = 180°$, $m(\angle 4) + m(\angle 5) = 180°$

Activity (1): (10 Min.)

In each of the following figures, the straight line L // the straight line M and the straight line K is a transversal to them. Find the measures of the angles marked by « ? »
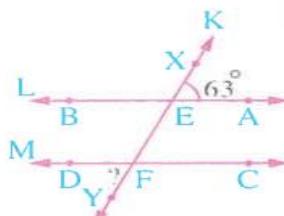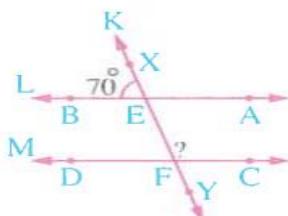
Teaching Strategies	
Brain storming	
Problem Solving	
Team Teaching	
Role-playing	
Work Groups	
Team Teaching	

Activity (2): (10 Min.)

In the opposite figure :

$\overrightarrow{AB} \parallel \overrightarrow{CD}$, $\overrightarrow{EF} \parallel \overrightarrow{CD}$

, m ($\angle$ A) = 42° and m ($\angle$ C) = 117°

Find : m ($\angle$ AEC)
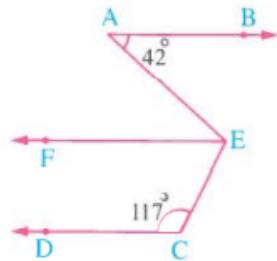
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Student's book	
Workbook	
Teacher's Guide	
Library	
Board	
Data show	

Activity (5): (10 Min.)

In the opposite figure :

m ($\angle$ A) = 40° , m ($\angle$ E) = 55°

, $\overrightarrow{AB} \parallel \overrightarrow{EF}$ and $\overrightarrow{AB} \parallel \overrightarrow{CD}$

Find : m ($\angle$ ACE)

Teaching sources	
School book	
Teacher	
Library	
Teacher's Guide	

Associated Activity	
Meetings	
Website	
Research	
Reading	
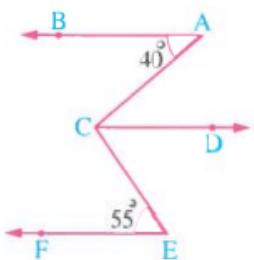
Activity (5): (10 Min.)

Find the value of X in each of the following
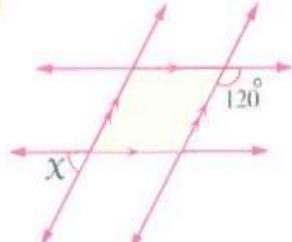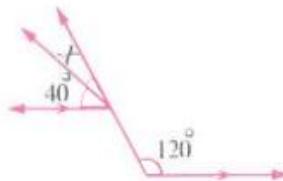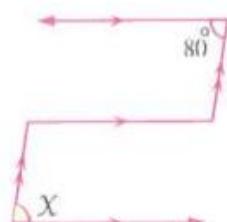
Evaluation

Complete each of the following

1. The straight line which is perpendicular to one of two parallel straight lines is .... to the other straight line in the plane.

2. If two straight lines are parallel to a third straight line , then they are ....

3. If a straight line cuts two parallel straight lines , then each two alternate angles are ....

4. If a straight line cuts two parallel straight lines , then each two corresponding angles are ....

5. If a straight line cuts two parallel straight lines , then each two interior angles in the same side of the transversal are ....

Homework

School book page (   ) , Questions number (   )

Day	Date	Class	Period	Geometry – Unit 4
				Lesson 5 – Part 2
				Parallelism

Lesson Objectives: -

By the end of the lesson, students will be able to:

1) Determine the alternate angles.
2) Determine the corresponding angles.
3) Determine the interior angles on one side of the transversal.

Presentation: (15 Min.)

How to prove that two straight lines are parallel ?

The two straight lines are parallel if a third straight line intersects them (as a transversal) and one of the following cases is satisfied :

1 Two alternate angles have the same measure.

2 Two corresponding angles have the same measure.

3 Two interior angles in the same side of the transversal are supplementary.

The perpendicular to one of two coplaner parallel straight lines is perpendicular to the other.

And vice versa , if two coplaner straight lines are perpendicular to a third one , then the two straight lines are parallel.

If two straight lines are parallel to a third straight line , then these two straight lines are parallel.

If parallel straight lines divide a straight line into segments of equal lengths , then they divide any other straight line into segments of equal lengths.

Activity (1): (10 Min.)

In the opposite figure :

$\overleftrightarrow{AZ}$ // $\overline{YD}$ // $\overline{XH}$ // $\overline{CB}$

, AY = YX = XC and AB = 15 cm.

Find the length of $\overline{BD}$ showing the reason.

Activity (2): (10 Min.)

In each of the following figures , show with reasons why is $\overline{AD} \parallel \overline{BC}$:
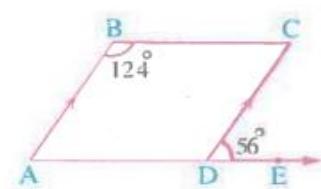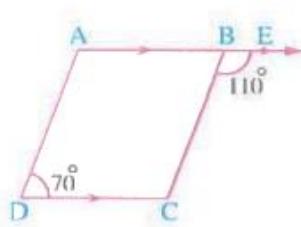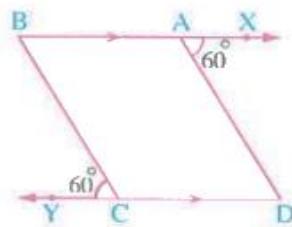
Activity (5): (10 Min.)

In the opposite figure :

$m (\angle XAD) = m (\angle B) = 60°$

, $m (\angle EDB) = 120°$, $AD = DB$ and $AC = 18$ cm.

Find the length of $\overline{AE}$ giving the reason.
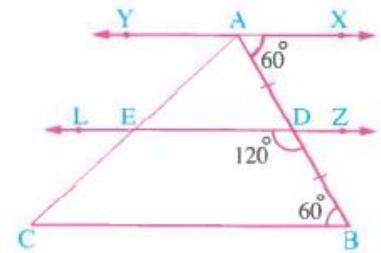
Activity (5): (10 Min.)

In the opposite figure :

$A \in \overline{BE}$, $\overrightarrow{AD}$ bisects $\angle BAC$

, $m (\angle EAC) = 100°$ and $m (\angle ACE) = 40°$

Is $\overrightarrow{AD} \parallel \overline{CE}$? Why ?
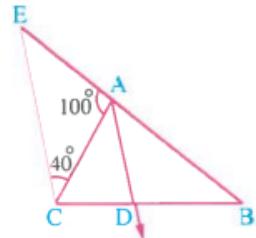
In the opposite figure :

$\overline{BD} \cap \overline{AC} = \{M\}$

, $MB = MD$ and $MA = MC$

1 Is $\triangle AMB \equiv \triangle CMD$? Why ?

2 Is $\overline{AB} \parallel \overline{CD}$? Why ?
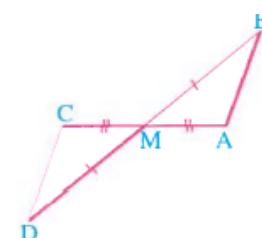
Evaluation

Complete each of the following

If a straight line cuts two parallel straight lines , then each two interior angles in the same side of the transversal are ....

If a straight line cuts two straight lines and there are two alternate angles having the same measure , then the two straight lines are ....

If a straight line cuts two straight lines and there are two corresponding angles having the same measure , then the two straight lines are ....

If a straight line cuts two straight lines and there are two interior angles in the same side of the transversal are supplementary , then the two straight lines are ....

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Homework

School book page ( ) , Questions number ( )

Teaching Strategies	
Brain storming	
Problem Solving	
Team Teaching	
Role-playing	
Work Groups	
Team Teaching	

Teaching Aids	
Student's book	
Workbook	
Teacher's Guide	
Library	
Board	
Data show	

Teaching sources	
School book	
Teacher	
Library	
Teacher's Guide	

Associated Activity	
Meetings	
Website	
Research	
Reading	

Lesson Objectives: -

By the end of the lesson, students will be able to:

1) Bisect an angle and a line segment.
2) Draw a perpendicular line to a straight line from it and to it.
3) Draw a congruent angles and parallel lines.

Activity (1): (10 Min.)

Using the geometric instruments, draw an angle of measure 120° and bisect it (Don't remove the arcs)

Using the geometric tools, draw an angle of measure 75° and bisect it (Don't remove the arcs)

Activity (2): (10 Min.)

📖 Using the ruler and the compasses, draw $\triangle ABC$ in which $AB = AC = 5$ cm. , $BC = 6$ cm. , then draw $\overline{AD} \perp \overline{BC}$ where $\overline{AD} \cap \overline{BC} = \{D\}$ Then find by measuring the length of $\overline{AD}$ (Don't remove the arcs).

Activity (3): (10 Min.)

Draw $\triangle ABC$ in which $AB = 6$ cm. , $m(\angle A) = 50°$, $m(\angle B) = 70°$ using the compasses and ruler draw $\overleftrightarrow{XY}$ passing through A and parallel to $\overleftrightarrow{BC}$ (Don't remove the arcs)

Activity (3): (10 Min.)

Draw the equilateral triangle ABC in which the length of each side is 4 cm. , then draw $\overrightarrow{CD} \perp \overleftrightarrow{CB}$ that intersects $\overrightarrow{BA}$ at D , find by measuring the length of $\overline{DA}$ « 4 cm. »

Evaluation

Draw the equilateral triangle ABC of side length 4 cm. using the compasses and the ruler bisect each of $\angle ABC$ and $\angle ACB$, If the two bisectors intersect at M , find by measuring $m(\angle BMC)$ (Don't remove the arcs)

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Homework

School book page (   ) , Questions number (   )

Day	Date	Class	Period	Geometry – Unit 4
				Lesson 6 – Part 2
				Geometric constructions

Lesson Objectives: -

By the end of the lesson, students will be able to:

1) Drawing a straight line from a given point parallel to given straight line
2) Bisecting a given line segment

Activity (1): (10 Min.)

Draw ∠ A of measure 100° , then using the ruler and the compasses , draw another angle B such that angle B equals in measure angle A , and bisect it.

Activity (2): (10 Min.)

Draw Δ ABC in which AB = 6 cm. , m (∠ A) = 50° , m (∠ B) = 70° using the compasses and ruler draw $\overleftrightarrow{XY}$ passing through A and parallel to $\overleftrightarrow{BC}$ (Don't remove the arcs)

Activity (3): (10 Min.)

📖 Draw Δ ABC using an unscaled ruler and compasses , bisect $\overline{AB}$ and $\overline{AC}$ at D and E respectively. Draw $\overline{DE}$

1️⃣ Using the compasses , measure the length of $\overline{DE}$ and check that BC = 2 DE

2️⃣ Does ∠ ABC ≡ ∠ ADE ? Does $\overline{DE}$ // $\overline{BC}$?

Activity (3): (10 Min.)

Draw Δ ABC in which AB = 6 cm. , m (∠ A) = 50° , m (∠ B) = 70° , then draw $\overline{CD} \perp \overline{AB}$ to cut it at D , then find the length of $\overline{CD}$ by measuring and calculate the area of Δ ABC (Don't remove the arcs).

Evaluation

Using the geometric instruments , draw Δ XYZ in which m (∠ Y) = 90° ,

XY = YZ = 4 cm. , then bisect $\overline{XZ}$ at L , then draw $\overline{YL}$

Find by measuring m (∠ XLY) (Don't remove the arcs)

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Homework

School book page ( ) , Questions number ( )